United States
Department of
Agriculture

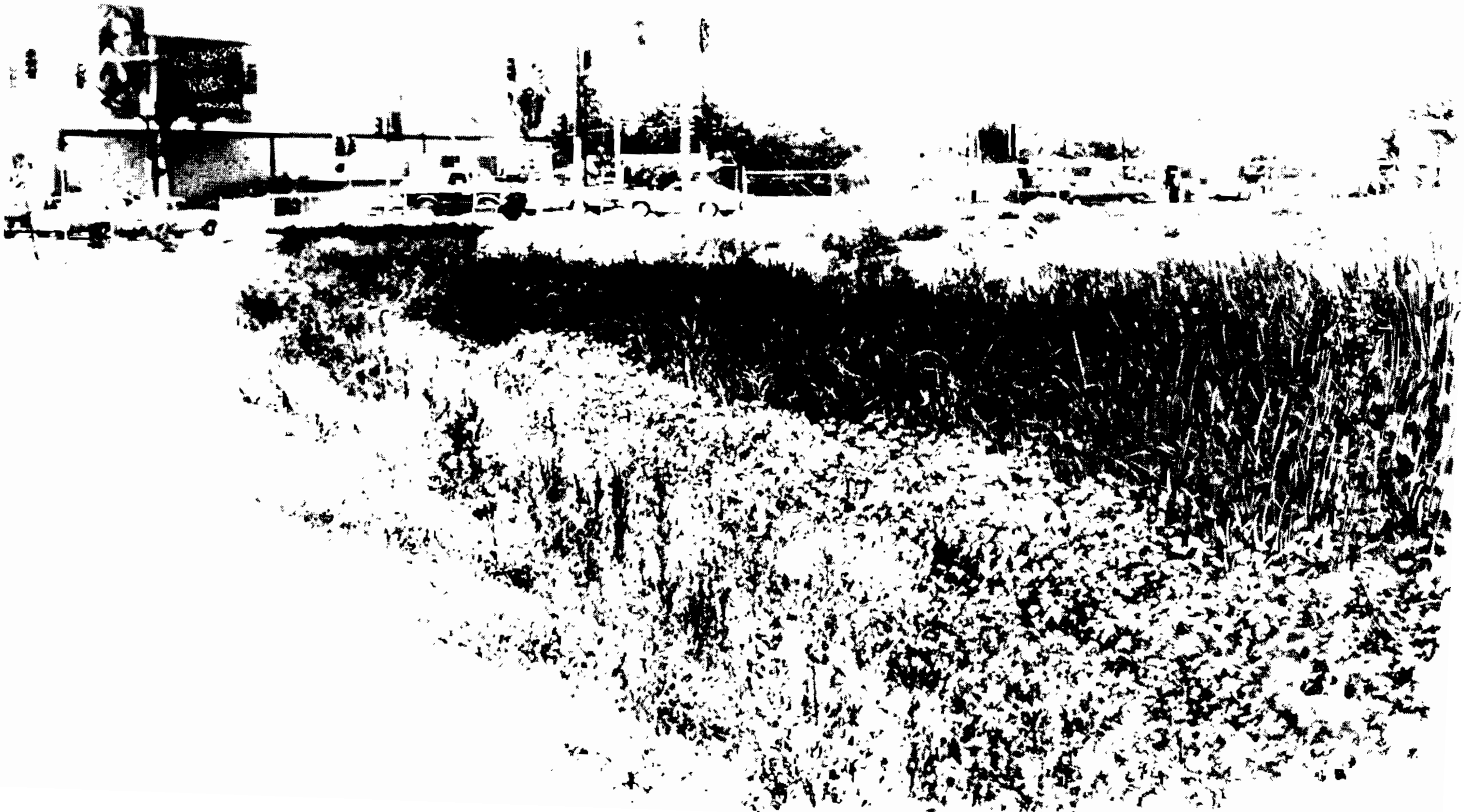
Soil
Conservation
Service

LOWER SILVER CREEK WATERSHED

FINAL WATERSHED PLAN AND ENVIRONMENTAL IMPACT STATEMENT/REPORT

SANTA CLARA COUNTY, CALIFORNIA

JULY, 1983



FINAL
WATERSHED PLAN
AND
ENVIRONMENTAL IMPACT STATEMENT/REPORT

LOWER SILVER CREEK WATERSHED
Santa Clara County, California

Prepared under the Authority of the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended (16 USC 1001-1008) and in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 4321 _et seq_).

Lead Agency:	USDA, Soil Conservation Service
Local Sponsors:	Evergreen Resource Conservation District Santa Clara Valley Water District

Abstract:

This document describes a plan for channel enlargement and floodproofing to reduce floodwater and related damages and the threat of loss of life. Alternatives considered during planning included no project, nonstructural floodplain protection, and channel enlargement and floodproofing. Economic benefits exceed costs by 1.3 to 1.0 for the proposed project. Sponsors will pay 12.4 percent of the $13,954,000 installation costs. Environmental impacts include reduced floodwater damages, reduced sedimentation, and reduced threat of loss of life. This document is intended to fulfill requirements of the National Environmental Policy Act and to be considered for authorization of Public Law 83-566 funding.

For additional information contact: Eugene E. Andreuccetti, State Conservationist, Soil Conservation Service, 2828 Chiles Road, Davis, CA 95616, phone (916) 449-2848.

WATERSHED AGREEMENT

between the

EVERGREEN RESOURCE CONSERVATION DISTRICT

and

SANTA CLARA VALLEY WATER DISTRICT
(Referred to herein as sponsors)

STATE OF CALIFORNIA

and the

SOIL CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE
(Referred to herein as SCS)

WHEREAS, application has heretofore been made to the Secretary of Agriculture by sponsors for assistance in preparing a plan for works of improvement for the Lower Silver Creek Watershed, State of California, under the authority of the Watershed Protection and Flood Prevention Act (16 U.S.C. 1001-1008); and

WHEREAS, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to SCS; and

WHEREAS, there has been developed through the cooperative efforts of the sponsors and SCS a plan for works of improvement for the LOWER SILVER CREEK WATERSHED, State of California, hereinafter referred to as the watershed plan-Environmental Impact Statement, which plan is annexed to and made a part of this agreement;

NOW, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through SCS, and the sponsors hereby agree on this plan and that the works of improvement for this project will be installed, operated, and maintained in accordance with the terms, conditions, and stipulations provided for in this watershed plan and including the following:

1. The sponsors will acquire, with other than P.L. 566 funds, such landrights as will be needed in connection with the works of improvement.

   Estimated cost is $1,639,000.

2. The sponsors assure that uniform and equitable treatment will be given to persons displaced from their homes, businesses, or farms as required by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as implemented by 7 CFR Part 21. The costs of relocation payments will be shared by the sponsors and SCS as follows:

	Sponsors (Percent)	SCS (Percent)	Estimated Relocation Payment Costs (Dollars)
Relocation Payments	12.4	87.6	$0[1]

[1] Investigation has disclosed that under present conditions the project measures will not result in the displacement of any person, business, or farm operation. However, if relocations become necessary, relocation payments will be cost shared in accordance with the percentages shown.

3. The sponsors will obtain all necessary Federal, state, and local permits as may be required for installation of the works of improvement.

4. The percentages of construction costs to be paid by the sponsors and by SCS are as follows:

Works of Improvement	Sponsors (Percent)	SCS (Percent)	Estimated Construction Costs (Dollars)
Structural (Channel Work)	0	100	10,397,000

5. The percentages of the engineering costs to be borne by the sponsors and SCS are as follows:

Works of Improvement	Sponsors (Percent)	SCS (Percent)	Estimated Engineering Costs (Dollars)
Structural (Channel Work)	0	100	623,000

6. The sponsors and SCS will each bear the costs of project administration that each incurs, estimated to be $92,000 and $1,196,000, respectively.

7. The percentages of nonstructural costs to be paid by the sponsors and by SCS are as follows:

Works of Improvement	Sponsors (Percent)	SCS (Percent)	Estimated Costs (Dollars)
Floodproofing	20	80	10,000

8. The sponsors will be responsible for the operation, maintenance, and replacement of the works of improvement by actually performing the work or arranging for such work, in accordance with agreements to be entered into before issuing invitations to bid for construction work.

9. The costs shown in this plan are preliminary estimates. Final costs to be borne by the parties hereto, will be the actual costs incurred in the installation of works of improvement.

10. This agreement is not a fund-obligating document. Financial and other assistance to be furnished by SCS in carrying out the plan is contingent upon the fulfillment of applicable laws and regulations and the availability of appropriations for this purpose.

11. A separate agreement will be entered into between SCS and sponsors before either party initiates work involving funds of the other party. Such agreements will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.

12. This plan may be amended or revised only by mutual agreement of the parties hereto, except that SCS may deauthorize funding at any time it determines that the sponsor has failed to comply with the conditions of this agreement. In this case, SCS shall promptly notify the sponsor in writing of the determination and the reasons for the deauthorization of project funding, together with the effective date. Payments made to the sponsor or recoveries by SCS shall be in accord with the legal rights and liabilities of the parties when project funding has been deauthorized. An amendment to incorporate changes affecting a specific measure may be made by mutual agreement between SCS and the sponsor(s) having specific responsibilities for the measure involved.

13. No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this plan, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

14. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7 CFR 15.1-1t.12), which provide that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any activity receiving Federal financial assistance.

EVERGREEN RESOURCE CONSERVATION DISTRICT
888 North First Street
San Jose, CA 95112

By: ____________________

Title: ____________________

Date: ____________________

The signing of this plan was authorized by a resolution of the governing body of the Evergreen Resource Conservation District adopted at a meeting held on ____________.

____

Date: ____________________

____
Address Zip Code

SANTA CLARA VALLEY WATER DISTRICT
5750 Almaden Expressway
San Jose, CA 95118

By: ____________________

Title: ____________________

Date: ____________________

The signing of this plan was authorized by a resolution of the governing body of the Santa Clara Valley Water District adopted at a meeting held on ____________.

____

Date: ____________________

____
Address Zip Code

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Approved By: ____________________
EUGENE E. ANDREUCCETTI
State Conservationist

Date: ____________________

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SUMMARY

SUMMARY

Project Name: Lower Silver Creek Watershed, Santa Clara County, California.

Sponsors: Evergreen Resource Conservation District
Santa Clara Valley Water District

Description of Recommended Plan: Channel modification including 3.77 miles of concrete-lined channel and 0.87 miles of earthen channel, and floodproofing of two structures will:

--reduce, from 1,412 to 140, the number of buildings damaged by a 100-year flood,

--reduce, from 3,400 to 400, the number of vehicles damaged by a 100-year flood,

--reduce, from nine to two, the number of roadways subject to closure by a 100-year flood,

--reduce, from 294,000 to 145,000, the number of motorists that would have to be re-routed due to road closures,

--reduce, from 20,080 tons to 140 tons, sediment deposition on the floodplain during a 100-year flood,

--reduce, from 2,900 to 350, the number of people that would require food, shelter, and other emergency services during a 100-year flood,

--reduce, from 621 to 13, the number of residences where a life-threatening hazard would exist during a 100-year flood, and would eliminate this risk to residents of a retirement center and to students and personnel at an elementary school; and

--provide for establishment of 6.6 acres of biological and landscape mitigation plantings.

Alternatives Considered: Alternatives considered were: No Project, Nonstructural, and Channel Work and Floodproofing.

Resource Information:

Size:	27,700 acres	
Land Use:	Urban	12,200 acres
	Transition Zone	2,900 acres
	Hillside and Rangeland	12,600 acres
Land Ownership:	Private	95.5 percent
	State, Local	4.5 percent
	Federal	0 percent
Number of Farms:	27	
Average Size:	480 acres	
Prime Farmland:	520 acres	
Wetlands:	Type 3	14 acres
	Type 5	50 acres

Floodplain Land Use: Urban (1,475 acres)
Threatened or Endangered Species: None
Cultural Resources: None

Problem Identification: Floodplain is located in a high density urban area where total damages from a 100-year flood are estimated to be $31,667,600. Average annual damages from all floods were estimated to be $1,782,700. Wildlife habitat and visual quality of the watershed have been reduced because of urbanization of the area. A serious threat of loss of life exists because officials would only have about a one-hour period from the time they could predict when a flood is imminent and the time actual flooding would occur. This problem is compounded by the fact that many residents in the floodplain are unaware of the flood risk and will be less likely to evacuate at the first signs of impending danger and because of the large number of children residing in the floodplain.

Candidate Plans Considered: Two alternatives, Nonstructural, and Channel Work and Floodproofing, were designated as candidate plans and considered by the sponsors before plan selection.

Project Purpose: Flood prevention

Principal Project Measures:

Concrete-lined channel	3.77 miles
Earthen channel	0.87 miles
Floodproofing	2 structures
Mitigation plantings	6.6 acres

Project Costs:

	PL-566 Funds	Other Funds	Total
Structural Measures			
Construction	$10,397,000	$ 0	$10,397,000
Land Rights	0	1,638,000	1,638,000
Project Administration	1,195,000	91,000	1,286,000
Engineering	623,000	0	623,000
Subtotal Structural	$12,215,000	$1,729,000	$13,944,000
Nonstructural Measures			
Construction	$ 6,000	$ 0	$ 6,000
Land Rights	0	1,000	1,000
Project Administration	1,000	1,000	2,000
Engineering	1,000	0	1,000
	$ 8,000	$ 2,000	$ 10,000
TOTAL PROJECT COST	$12,223,000	$1,731,000	$13,954,000

Annual Project Benefits:

Residential, Commercial, Industrial:	$1,587,300
Other:	29,000
Total	$1,616,300

Acres Benefitted:

Nonstructural	1
Structural	1,099
Total	1,100

Number of Buildings Protected:

Nonstructural	2
Structural	1,270
Total	1,272

Impacts:

Land Use Changes: None

Natural Resources Changes:	Wetlands	+8.9 acres (low quality)
	Wildlife habitat (riparian)	+2.0 acres (with mitigation)
	Prime Farmland	None
	Cultural Resources	None

Major Conclusions: There is a serious potential for major flooding to occur. Alternatives were formulated to solve the flooding problem. The alternative that produced the highest level of net benefits was selected as the recommended plan. Adverse environmental impacts were quantified and will be mitigated as part of this project.

Areas of Controversy: All areas of controversy that surfaced during the scoping and public participation process have been resolved or addressed in this document.

Issues to be Resolved: None.

PROBLEM and OPPORTUNITY IDENTIFICATION

INTRODUCTION

The purpose of this watershed plan and environmental impact statement/report is to appraise the economic feasibilty and environmental acceptability of solving flooding problems in the Lower Silver Creek Watershed. This document describes watershed problems and resources, plan formulation, the recommended plan, and expected environmental impacts. This document also provides the basis for authorizing Federal assistance for implementation.

The sponsoring local organizations, the Evergreen Resource Conservation District (ERCD) and the Santa Clara Valley Water District (SCVWD), applied for federal assistance under the Watershed Protection and Flood Prevention Act of 1954 (Public Law 83-566) in February 1979. This application was approved in September 1979 by the California Department of Conservation.

Detailed planning authorization was issued in September 1980 by the Administrator of the Soil Conservation Service (SCS). The Soil Conservation Service provided technical assistance to the sponsors in the development of the plan. Other federal, state, and local agencies assisted in the planning process. Responsibility for compliance with the National Environmental Policy Act rests with the Soil Conservation Service. Responsibility for compliance with the California Environmental Quality Act rests with the Santa Clara Valley Water District.

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*All information and data, except as otherwise noted, were collected during the watershed planning investigations by SCS, USDA personnel.

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PROJECT SETTING

The Lower Silver Creek Watershed covers an area of about 43 square miles (27,700 acres). This includes Thompson Creek, with a watershed of about 20.9 square miles (13,400 acres). It lies within the California Water Resources Region and is in the San Francisco Bay Subregion. Lower Silver and Thompson Creeks are located in the eastern portion of the City of San Jose and in the unincorporated area of the County of Santa Clara. San Jose is located at the southern end of San Francisco Bay in the Santa Clara Valley.

The watershed is about 5 miles wide at its downstream end and gradually narrows to a width of about 1 mile at its upstream end. The average width of the 12-mile long watershed is about 4 miles. The watershed is bounded on the east by the Diablo Range. The upper regions of the watershed are located in steep foothills while the lower region is gently sloping. This flatter area, about one-third of the watershed, is primarily urbanized. The remainder of the watershed is generally open space but is being rapidly urbanized. The plant cover in this open space consists of scattered oak with underlying shrubs and grass. Riparian vegetation is evident along the foothill streams.

The watershed includes many subwatersheds of tributary creeks, with the largest being Thompson Creek. Other tributaries, from north to south, are Miguelita, North Babb, South Babb, Flint, and Ruby Creeks. Thompson Creek's tributary streams are Norwood, Quimby, Fowler, Evergreen, and Yerba Buena Creeks. All these streams are intermittent and most have been enlarged as they enter the valley floor. Thompson Creek originates in the Diablo Range foothills at an elevation of about 2,300 feet and flows northerly to its confluence with Lower Silver Creek. Lower Silver Creek, also an intermittent stream, originates at an elevation of about 180 feet and flows northerly to the Lake Cunningham area. Downstream of Lake Cunningham, the man-made earthen and concrete channel flows in a northwesterly direction to its confluence with Coyote Creek at an elevation of about 60 feet.

The area has a Mediterranean-type climate with moderate temperatures and light to moderate precipitation. Ninety percent of the rainfall occurs during the months of November through March. Flooding is most severe when a series of large Pacific storms pass through the watershed in succession. The 1955 flood was caused by such a series of storms.

Extreme temperatures range from about 20° F to 110° F. The average winter lows are in the middle 30s, and average summer highs are in the 80s. The average growing season is about 336 days. Precipitation averages 14 inches in the Santa Clara Valley with up to 18 inches in the mountainous areas in the eastern part of the watershed.

The bedrock in the hills of the upper watershed consists primarily of sandstones, shales, and conglomerates of the Knoxville, Berryessa, Monterey, and Briones Formations. These are mostly folded metamorphosed units of Jurassic to Cretaceous and Tertiary age. The oldest rocks are the Franciscan Formation in the southeastern corner of the upper watershed. Numerous landslides have occurred in the hills as documented by Nilsen, 1972 (1).

The soils that have developed on the alluvial fans, in the Cunningham basin, and in the foothills, fall into three different soils groups. The soils on the alluvial fans are mainly loam and clay loam soils of the Hillgate-Positas association. These soils are well-drained but have slowly draining subsoils. Soils in the basin are composed of very deep, level, and poorly drained silty clay soils of the Sunnyvale, Castro, and Clear Lake associations. Soils in the foothills consist of residual soils weathered from rock and include the moderately well-drained clay loam soils of the Altamont-Azule association and the well-drained loam soils of the Los Gatos-Gaviota-Vallecitos association. The soils along Lower Silver Creek have poor surface drainage and slow subsurface drainage. Subsurface soils vary from medium to fine-textured soils of the alluvial plains variety. Predominate types of soils are Clear Lake clay, Pleasanton loam and Sunnyvale silty clay (2).

Lake Cunningham is located on alluvial fan deposits. The Lake Cunningham basin is a natural depression that has collected sediment composed of fine-grained, cohesive, silty clay with some interspersed sandy silt layers. These deposits have formed from sediment eroded from the foothills.

The San Francisco Bay area has a long history of seismic activity and related earth movements. The Hayward, Quimby, Evergreen, Aguague, Clayton, Crosley, and Silver Creek Faults pass through the watershed, while the Calaveras and San Andreas Faults are located nearby. Known historically active faults are the Hayward, Crosley, Calaveras, and San Andreas Faults.

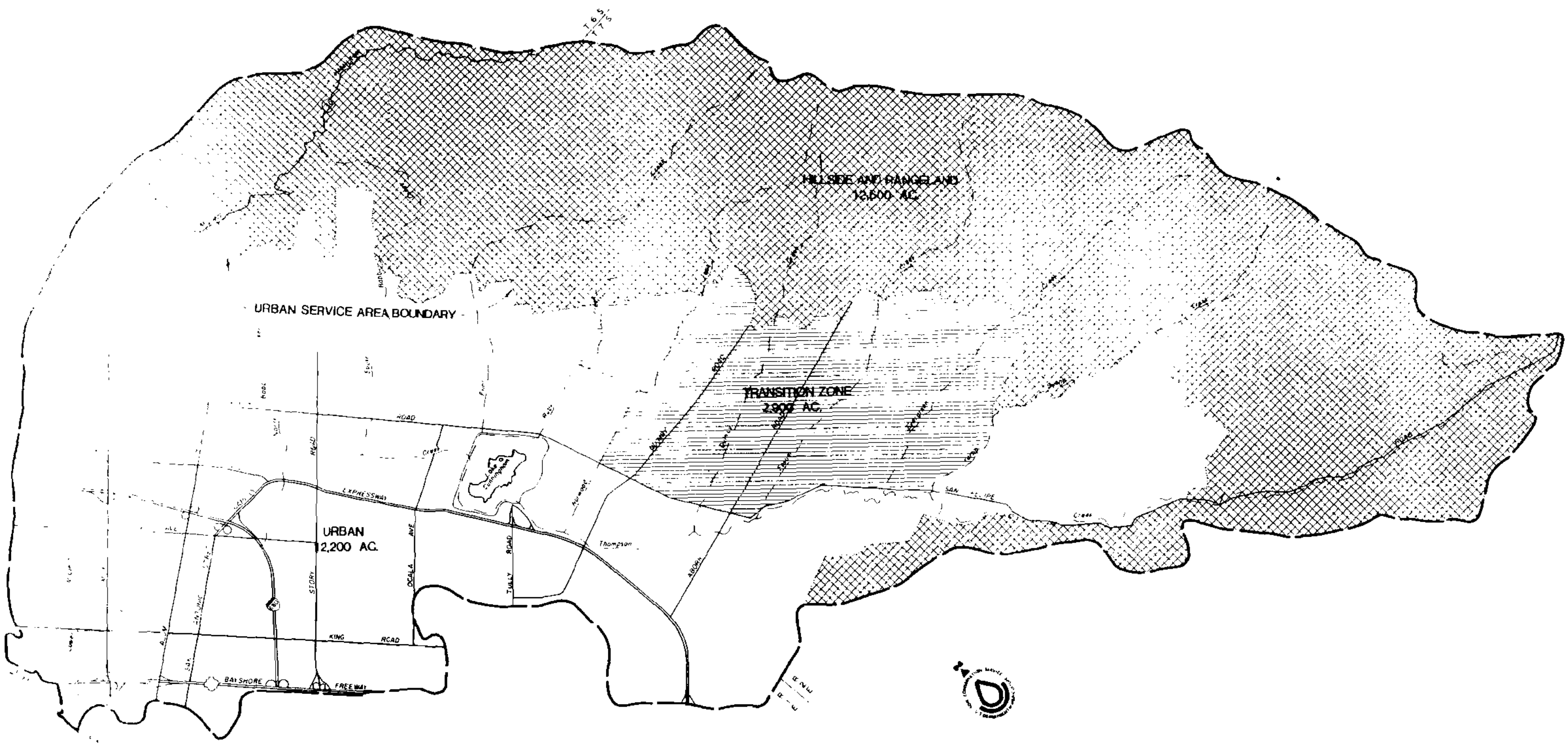
Measurements of accumulated strains across major bay area faults (San Andreas, Hayward and Calaveras) indicate major earthquakes will occur every 50 to 100 years. The maximum forces may be comparable to those experienced in the San Francisco earthquake of 1906.

Much of the western half of the watershed is within the urban service area of San Jose and is intensively urbanized (Figure 1). This area comprises 12,200 acres and contains a mix of land uses including residential, apartments, commercial, industrial, and parks. The largest single urban land use is single family residential.

The upland area on the eastern and southern fringes of the watershed is referred to as hillside and is mostly rangeland. This area comprises 12,600 acres and its dominant characteristics are its steep slopes and inaccessibility. There are relatively few residences or roads in the area.

The third major region in the watershed is an area with gentle slopes that is referred to as the transition zone. The transition zone contains 2,900 acres and is an area that is rapidly being converted from agricultural to urban use. Between 1976 and 1980, 20 percent of the area was converted to residential land use. In 1976, there were 312 acres of urban land and 2,588 acres of agricultural land, of which 1,530 acres were orchards or vineyards. By 1980 the acreages were 896 urban and 2,004 agricultural, of which 1,216 were orchards or vineyards.

Plant communities such as chaparral, oak woodland, grassland, and riparian exist in the foothills of the upper watershed. These communities support a high diversity of wildlife. However, the lower watershed is highly urbanized and provides little habitat for wildlife. The remaining habitat is restricted



LAND USE ZONES

LOWER SILVER CREEK WATERSHED

SANTA CLARA COUNTY, CALIFORNIA

FIGURE 1

to scattered riparian plant communities along the stream systems. Many species of birds use these areas for nesting and foraging.

Since the early 1950s, the San Jose Standard Metropolitan Statistical Area (SMSA) has experienced extraordinary population growth. From 1950 to 1970, the total population has increased from 290,500 to 1,101,000. This represents an average annual growth of nearly 7 percent.

Population growth in the watershed has been similar to that of the SMSA except that the rate of growth has been more pronounced during the last 10 years. The population growth in the watershed is attributed to the outward expansion of the suburbs and will most likely continue to occur for the next 10 years. The population of the watershed in 1980 was about 106,700 of which 36 percent were Caucasian, 43 percent were Hispanic, 10 percent were black, and 11 percent were of various other racial or ethnic backgrounds.

The economy of the San Jose area is heavily dependent on the manufacturing industry which employs nearly 35 percent of all wage and salary workers in the area. Production of durable goods, particularly electronic components, parts, and equipment accounts for 50 percent of the jobs in the manufacturing industry. The service industries and the retail and trade industries account for an additional 30 percent and 20 percent, respectively, of all wage and salary workers. Agriculture employs less than 2 percent of the total San Jose work force. This low level of agricultural related employment reflects the small amount of open land being farmed in the area. Common crops in the watershed include grain, truck crops, grapes, and other fruits. The 1980 unemployment rate in the watershed was about 11 percent. The 1980 median household income for the watershed was about $21,100.

PROBLEM and OPPORTUNITY IDENTIFICATION

PROBLEM AND OPPORTUNITY IDENTIFICATION

Floodwaters from Lower Silver Creek present the main problem. These floodwaters would pose a serious threat of loss of life and substantial damages to residences and businesses. Major traffic routes would be subject to closure thereby limiting many emergency services such as fire, police, and medical. Sediment damages to roads and property would also result from flooding. Other problems include the loss of wildlife habitat and the change in landscape as a result of past work on the channel. A shortage of recreational facilities also occurs in the watershed.

Flooding

In its former natural setting, Lower Silver Creek flowed in an ill-defined channel. Flows from the creek often flooded the low-lying wetland areas around what is today Lake Cunningham. Historically, floodwaters from Lower Silver Creek have inundated the areas adjacent to the creek and westerly of the creek to Bayshore Freeway. The floods of 1952, 1955, and 1958 caused considerable damage to homes and businesses that were existing in the floodplain at the time. No monetary figures are available on these damages.

In the early 1950s, farmers diverted Lower Silver Creek into a man-made channel between the Lake Cunningham area and what was then North Babb Creek. This diversion was installed to reclaim the wetland areas for agricultural purposes. In the mid-1950s, developers began purchasing the agricultural land in the area and converted it to residential and commercial uses. This created a serious potential for large flood damages.

The Santa Clara Valley Water District (SCVWD), the agency responsible for flood control in the county, has installed several projects in an effort to reduce flooding from Lower Silver Creek. A summary of these projects are:

1956-1958--Enlarged the channel between Coyote Creek and Capitol Avenue (now Capitol Expressway).

1970s--Diverted the upper portion of Lower Silver Creek watershed to Coyote Creek. Realigned and enlarged the channel between Capitol Expressway and King Road, upstream of the Lake Cunningham area. Enlarged Thompson Creek from Lower Silver Creek through Quimby Road.

1976--Further enlarged the channel section between Capitol Expressway and Cunningham Avenue.

1978-1979--Installed, with the cooperation of the City of San Jose, Lake Cunningham that provides 590 acre-feet of flood storage. Installed setback levees along Thompson Creek from Quimby Road upstream to Cadwallader Avenue.

These changes in the Lower Silver Creek channel, along with the installation of Lake Cunningham and work on Thompson Creek, have reduced the potential of high flood damages from smaller, more frequent storms.

However, the channel capacity of Lower Silver Creek is not sufficient to prevent extensive flooding from larger, more infrequent storms. A major flood today would result in substantially higher damages than the major floods that occurred in the 1950s. This is because of the large amount of development that has occurred in the floodplain in the last 15 years. Total damages today from a 100-year flood, to buildings and contents alone, have been calculated at $26,818,100 (Table A). Average annual damages from all floods are estimated to be $1,461,400.

TABLE A
FLOOD DAMAGES BY FLOOD FREQUENCY

TYPE OF BUILDING	5-YEAR	10-YEAR	25-YEAR	100-YEAR	500-YEAR
Residential					
Total Damages ($)[1]	255,300	3,867,300	5,970,500	21,899,200	42,746,800
Number Flooded[2]	16	339	478	1,305	1,943
Commercial					
Total Damages ($)	0	528,000	805,800	2,268,700	4,109,800
Number Flooded	0	22	29	73	107
Industrial					
Total Damages ($)	4,500	1,200,700	1,720,500	2,280,200	2,830,800
Number Flooded	1	14	17	17	17
Churches					
Total Damages ($)	9,800	18,900	19,000	22,400	25,800
Number Flooded	1	1	1	2	2
Schools					
Total Damages ($)	51,200	214,200	249,000	347,600	927,000
Number Flooded	3	14	14	15	22
TOTAL DAMAGES ($)	320,800	5,829,100	8,764,800	26,818,100	50,640,200
TOTAL FLOODED (#)	21	390	539	1,412	2,091

[1] Includes damages to yards and outside improvements.
[2] Number of buildings suffering damages from interior flooding.

The 100-year floodplain is shown in Figure B-1, Appendix B. The following depths of flooding can be expected during the 100-year flood event (see Figure 7, page 59, for street locations):

--Three feet - Along Capitol Expressway between Lake Cunningham and Story Road,

--Four feet - Between Story Road and Interstate 680 road embankment,

--Two feet - Between Interstate 680 and intersection of King and McKee Roads,

--Three to four feet - Low areas between intersection of King and McKee Roads to confluence with Coyote Creek.

Ponding of floodwaters, as a result of man-made obstacles such as railroad and road embankments would occur in the following locations:

--Interstate 680 intersection with Capitol Expressway,

--West of the McKee and King Road intersection,

--Industrial Park along Lenfest Avenue.

A slow moving, sheet flow of floodwaters would cover the remaining floodplain. Several major roadways would also be severely affected by flooding. Stretches of Capitol Expressway, Ocala Avenue, Story Road, Jackson Avenue, Alum Rock Avenue, Bayshore Freeway, Interstate 680, McKee Road, King Road, and a number of smaller roads would be subject to closure because of flooding (Table B).

TABLE B
ROAD FLOODING
Depth (ft.)/Duration (hrs.)

LOCATION	10-YEAR	25-YEAR	100-YEAR
Ocala Avenue at Capitol Expressway	0	0	2.2/18
Capitol Expressway (between Lake Cunningham and Interstate 680)	1.5/2	2.4/4	2.7/18
Story Road (between Jackson Avenue and Capitol Expressway)	0.7/2	0.9/4	1.8/18
Jackson Avenue (at Interstate 680)	Minor	0.1/13	1.6/20
Alum Rock Avenue (west of Lower Silver Creek Channel)	1.1/7	1.1/7	2.5/15
McKee and King Roads	1.0/20	1.3/20	1.8/20
Bayshore Freeway (at McKee Road)	11.0/20	11.3/20	12.0/20
Interstate 680 (at McKee Road)	0	22.0/20	22.0/20

Closure of these roads would cause major traffic disruptions and congestions. Traffic flows in many cases would be re-routed to flood-free areas causing motorists significant time delays and increased operating costs to arrive at their destinations. At the 100-year event, estimates are that nearly 210,000 vehicle trips involving 294,000 people have the potential to be affected by these road closures. These people could be expected to have a 30-minute to one-hour delay in travel time and each vehicle would average about $1.00 in extra operating expenses. Average annual losses due to this traffic disruption are estimated to be $19,700.

Road closures would also affect emergency services. Police, fire, and medical vehicles will be delayed in responding to calls for assistance, thereby resulting in a threat to human lives, health, and safety.

In addition to traffic disruptions, sediment deposition would occur on many of the roadways, necessitating lengthy and expensive cleanup activities (Table C). In many areas, this sedimentation would be only minor (1 inch or less) at the 100-year event. However, in the ponded areas where sediment would have the opportunity to deposit, such as on Capitol Expressway at its intersection with Interstate 680, and at the intersection of McKee and King Roads, sediment depths would range from 3 to 6 inches. Average annual cleanup costs are estimated to be $13,900.

TABLE C
SEDIMENT DAMAGES TO MAJOR ROADS

Flood Frequency (Years)	Sediment Deposition (Tons)	Sediment Deposition (Cubic Yards)	Maximum Depth (Inches)	Average Depth (Inches)	Cleanup Cost (Dollars)
25	3,480	3,220	3	0.1	121,000
50	5,660	5,240	4	0.3	217,000
100	10,040	9,300	6	0.5	339,000

Approximately 7,500 automobiles are owned by floodplain residents and if these vehicles are not removed from the floodplain before floodwaters rise, they would also suffer damages. Nuisance damages would begin when floodwaters exceed 6 inches in depth and increase substantially when the water reaches 12 inches and begins to enter vehicles. Approximately 3,400 vehicles would receive some damages due to flooding during the 100-year flood. Average annual damages to these vehicles are estimated to be $273,700.

In the event of a large flood, emergency services would be required in the floodplain. In the Lower Silver Creek floodplain, floodplain residents would require some form of emergency assistance for floods exceeding the 5-year event. The amount of emergency help required would increase as the severity of the flood event increases. For instance, at the 100-year event about 250 police, civil defense, and/or national guardsmen would be needed to secure the area against looting and assist in emergency operations. Buses, boats, and other vehicles would be needed to evacuate an estimated 2,900 people. Emergency shelters would have to be set up by the Red Cross (or some other agency) to feed and house the people evacuated and medical help would have to be made available. The average annual cost of providing these services is estimated to be $14,000.

The total value of average annual damages evaluated in all categories is estimated to be $1,782,700. However, in any densely populated floodplain such as in the case of Lower Silver Creek, a major flood would cause many other damages that were not evaluated in this study. Estimates were not made on structural damages that would occur to utilities, roads, and bridges. Estimates also were not made on revenues that would be lost by businesses in the commercial and industrial areas nor on lost wages of employees of these businesses.

In addition to the economic damages that would result from floods, there would be a serious threat of loss of life from larger floods. For instance, at the 100-year event, approximately 621 houses are located where outside water depths would exceed 3 feet. These depths, especially considering the number of young children living in the floodplain, could pose a serious threat to floodplain residents. Residents are, for the most part, unaware of the flood risk. The last large flood occurred in the 1950s. Since then the population in the floodplain has increased from an estimated 4,500 people to 19,197 in 1980. This compounds the problem as floodplain residents will be less likely to evacuate at the first signs of impending danger. Currently, an automated flood warning system does not exist. Advance flood warning now is accomplished by the city of San Jose using standard communications systems. This method would not allow enough warning time should flooding occur to safely evacuate residents from danger areas. This is because there would only be about a one hour period from the time officials could predict when a flood is imminent and the time actual flooding would occur.

Serious injury or possible death could occur at Anne Darling School (see Figure 7) where 1 to 2½ feet of water would be inside the buildings and 3 feet outside at the 100-year event. Over 500 elementary school children (ages 5 to

12) attend this school. Should school be in session when flooding occurs, it is possible that not all the students could be safely evacuated. Elderly residents in the Hidden Brooks Retirement Apartments located on Wooster Avenue near the outlet of Lower Silver Creek would also have their lives jeopardized as depths inside these buildings would reach 1.5 feet at the 100-year event.

The quality of life for many of the poorer residents in the floodplain would decrease. Nearly 1,000 people live in subsidized housing and an unknown number receive other financial assistance. Low income people have little financial reserves to overcome flood losses. They must make special sacrifices to recover from property losses or encumber themselves in debt.

Interviews with floodplain residents indicated that the potential loss of pets and family mementos, while perhaps not significant from a larger perspective, can be more traumatic than economic losses. This is another factor in the diminished quality of life that floodplain residents would have to endure.

Biological

Past agricultural and urban developments have altered or removed most of the wildlife and fish habitat within the western portion of the watershed. The remaining habitat is restricted to riparian plant communities along the creeks. The riparian vegetation along Lower Silver Creek has been altered and reduced due to urbanization and channelization of the creek.

The eastern portion of the watershed is partially developed but an extensive oak-grassland community still exists in the foothill region. Various intermittent streams flowing from the upper watershed into Lower Silver Creek and Thompson Creek support riparian plant communities that provide habitat for a variety of wildlife species. Projected urbanization in the foothill region will further reduce and alter the wildlife habitat and riparian vegetation.

The potential to enhance wildlife habitat in the floodplain is limited because of high density urban development. There are opportunities to enhance wildlife habitat by planting native trees and shrubs along Lower Silver Creek which would provide a vegetative corridor between the riparian communities of

Thompson Creek and Coyote Creek. The vegetative plantings would not only enhance the wildlife and aesthetic values of the urban environment but provide outdoor educational opportunities for local residents. This is particularly so at Mathson School, Mayfair Park, Plata Arroyo Park, and near the confluence with Coyote Creek (Figure 2). Figure 7 shows the location of these areas.

Visual

Lower Silver Creek downstream of Lake Cunningham lacks aesthetic appeal. The use of soil sterilants and other maintenance activities have reduced the vegetation to a few trees and weeds.

Maintenance activities near the confluence of Lower Silver Creek and Coyote Creek periodically remove riparian vegetation that provides a noise buffer and visual screen between an apartment recreation center and the adjacent industrial area.

Opportunities exist to coordinate wildlife plantings and landscape plantings to enhance both wildlife and aesthetic qualities along Lower Silver Creek. Plants could be selected which provide varying forms of visual relief and also food and cover for many species of songbirds.

Other portions of the stream could include low growing shrubs and vines to provide erosion control. Vegetation along the stream would enhance the aesthetic values of the adjacent neighborhood and provide wildlife habitat.

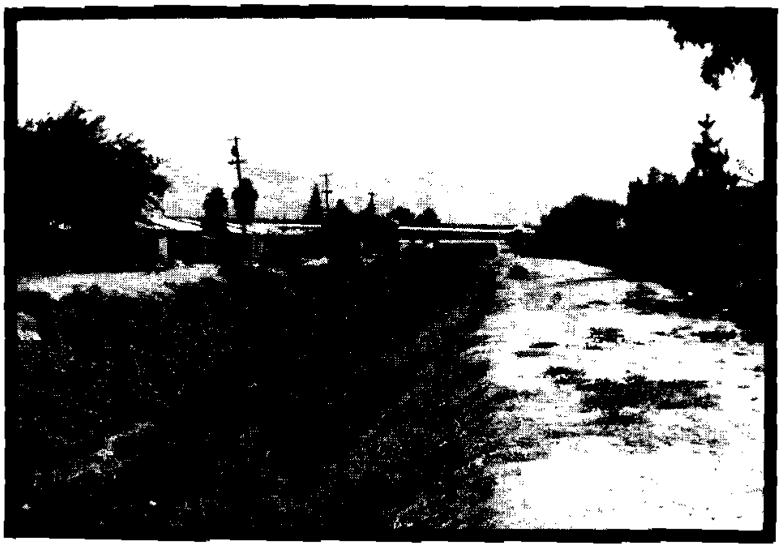
Recreation

Urbanization in the watershed has resulted in increased recreational demands. Recreational demand in Santa Clara County currently exceeds the supply (3).

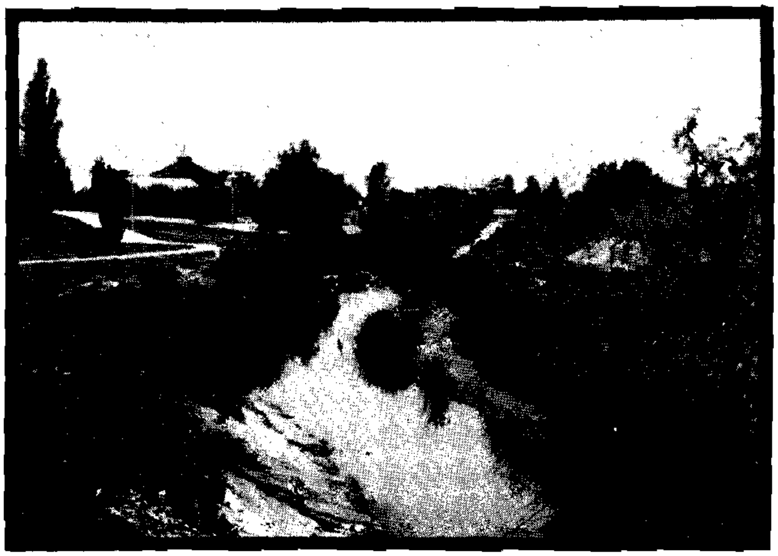
A master plan for the Lake Cunningham Regional Park was prepared in 1978 and construction is currently underway. This should help alleviate some of the recreational shortages in the immediate watershed area.

FIGURE 2

Possible Wildlife Enhancement Sites



Mathson School Area



Mayfair Park

Plata Arroyo Park

Two opportunities for developing water-based recreation as part of a PL-566 project exist in the watershed. One is for recreational development along Lower Silver Creek. The second involves providing financial assistance to accelerate the timetable for installing the recreational facilities at Lake Cunningham. This latter approach would also involve modifying the lake for the purpose of increasing floodwater storage.

INVENTORY and FORECASTING

INVENTORY AND FORECASTING

Scoping of Concerns

The major concern of the sponsors is to solve the flooding problem and its associated impacts upon transportation routes, emergency services, human health and safety, and the quality of life. A number of other concerns were expressed by individuals, groups, and agencies during the planning process.

Interviews were conducted with approximately 25 community leaders including community center directors, school district personnel, community activists, business owners, city council members, and housing authority personnel. All expressed similar concerns. Many expressed concern about the cost of the project and how it would be paid for. Others felt that crime (residential theft, vandalism) is facilitated by access to the existing creek channel. They feel that the design of any flood control channel through the area should take into consideration ways to limit access to private property and to the channel at road and pedestrian bridge crossings. Still others stressed that relocation of residents and acquisition of additional rights-of-way should be avoided, if possible, as should the use of concrete-lined channels. Residents near the confluence of Lower Silver Creek and Coyote Creek are concerned about the periodic removal of vegetation along the creek in their area. This vegetation provides a visual screen to an adjacent industrial area. The unsightly appearance of the existing channel is a concern to many.

The sponsors and several private citizens are also concerned about the loss of wildlife habitat over the years because of urbanization. There is a need to preserve the remaining wildlife habitat and wetlands along Lower Silver Creek.

The U.S. Fish and Wildlife Service (USFWS) expressed concern about the effects of possible increased sediment deposition and freshwater inflows into the San Francisco Bay National Wildlife Refuge. Part of the refuge is at the confluence of Coyote Creek and the bay. Others expressed concern that the proposed project will induce downstream flooding along Coyote Creek.

Other environmental values are recognized as significant because of their importance to society, and are protected by statute or administrative regulations. These values include cultural resources, endangered and threatened species, wetlands, beneficial floodplain values, and prime agricultural land.

A broad range of environmental, economic, and social factors were assessed, and the significance of these factors to decision making was evaluated (Table D). Those factors having a significant effect on decision making are rated high or medium. Factors that will not be impacted by any proposed alternatives or that have little significance in decision making are rated low or none.

TABLE D
EVALUATION OF IDENTIFIED CONCERNS

Economic, Environmental and Social Factors	Degree of Significance to Decision Making 1/	Remarks
Floodwater Damage	High	
Erosion and Sedimentation	Medium	
Land Use Changes	Low	2/
Prime Agricultural Land	None	2/
Streams, Lakes, and Wetlands	High	
Wildlife	Medium	
Endangered/Threatened Plants and Animals	None	2/
Fisheries	Low	2/
Visual Resources	Medium	
Downstream Areas	Medium	
Air Quality	Low	2/
Water Quality	Low	2/
Ground Water	Low	2/
Geologic Hazards	Low	2/
Irrigation	None	2/
Transportation	High	
Human Health, Safety, and Quality of Life	High	
Mineral Resources	None	2/
Archaeological and Historical Resources	None	2/
Recreation	None	2/

1/ High = Must be considered in the analysis of alternatives
Medium = May be affected by some alternative solutions
Low = Consider, but not too significant
None = Need not be considered in analysis
2/ Will not be discussed further in the watershed plan and environmental impact statement. For explanation see following narrative.

Significant factors are included in Table K, SUMMARY AND COMPARISON OF CANDIDATE PLANS. Factors that will not be impacted by any proposed project actions are discussed on the following pages (25-27).

Land Use Changes: Land in the floodplain is 95 percent developed. Any existing open parcels, including agricultural land, outside the floodplain but within the urban service area of the watershed will be developed according to the General Plans of Santa Clara County and the city of San Jose. The rangeland in the watershed is outside the urban service area, and because of its steep slopes and lack of roads, there will probably be only scattered development in this area. Santa Clara County's General Plan has restricted development in this area to a minimum allowable size of one residence per 20 acres.

Prime Agricultural Land: The watershed contains about 520 acres of prime farmland. The General Plan of Santa Clara County has designated this land as urban reserve land, and thus has committed it to urban use for the city of San Jose. These lands are outside the floodplain and implementation of this flood control project will not cause or encourage the conversion of this prime farmland.

Endangered and Threatened Plants and Animals: The U.S. Fish and Wildlife Service was contacted regarding listed endangered or threatened species within the watershed. The endangered San Joaquin kit fox and two candidates for the endangered or threatened species list, the Contra Costa baeria and Mt. Hamilton thistle, were identified as possibly occurring in the watershed. A biological evaluation was conducted to determine if any of the species occur within the floodplain or would be impacted by any of the proposed alternatives. A biological assessment was prepared and USFWS concurred that the proposed alternatives will not impact any listed endangered, threatened, or candidate species of plants or animals.

Fisheries: A field survey of Lower Silver Creek was conducted and the California Department of Fish and Game's records were reviewed to determine fish species diversity. These surveys indicated a low species diversity consisting primarily of introduced species such as mosquito fish, fathead minnows, and goldfish. The presence of roach, three-spine stickleback, and hitch was also documented by Fish and Game records. Fisheries is not a significant resource in Lower Silver Creek because of the low species diversity, limited populations, and intermittent flows which provide only periodic habitat. The species present will continue to inhabit Lower Silver Creek after implementation of any proposed project actions.

Air Quality: The Santa Clara Valley is a bowl surrounded by mountains that traps and accumulates air pollutants. Photochemical smog is the main air pollutant problem in the valley. The largest source of the gases that trigger photochemical smog is the automobile. The Alum Rock monitoring site, located in the watershed, experienced four days in 1981 that exceeded the air quality standards for ozone, or photochemical smog. Air quality standards probably will be exceeded at times during construction of any of the alternatives but this will only be temporary and localized to the immediate construction area. Steps will be taken to minimize dust and exhaust emissions during construction.

Water Quality: Little data exists on surface water quality in Lower Silver Creek watershed or in surrounding watersheds. Historically, urban surface runoff, especially from street surfaces, and sewage discharges have lowered the water quality in the watershed. Urban surface runoff will continue in the future. Sewage discharges in the watershed will be alleviated by the expansion of the San Jose/Santa Clara wastewater treatment plant.

Decreasing flooding as part of any proposed project actions will increase sediment in the channel systems but the increased volumes of water in the channel will result in a sediment concentration that is lower than present conditions. The amount of this increased sediment load will not cause significant water quality impacts.

Ground Water: The confined ground water zone occurs beneath an extensive, nearly impermeable clay layer. This confined zone constitutes the main ground water zone from which most of the water is pumped in the area. It is recharged from the unconfined "forebay" area around the edges of the valley. Heavy extraction of water from the basin caused an accumulated overdraft of about 685,000 acre-feet up to 1967. The current ground water management program appears to be effectively controlling the historical overdraft problem (4).

Because of the low infiltration rates of the finely-textured soils in the floodplain and the fact that the floodplain is located over a confined basin, areal extent and depth of flooding does not significantly affect recharge.

Therefore, any proposed project actions that will reduce flooding will have little effect on ground water.

Geologic Hazards: Steeply sloping land along the northeast and southeast boundaries of the watershed is susceptible to soil creep and landslides. Steep banks along earthen channels are also susceptible to failure. Earthquake hazards have been discussed under Project Setting. Any proposed project action, particularly stream channelization, will be designed to minimize the danger of bank failure.

Irrigation: Irrigation of the remaining agricultural land in the upper watershed is accomplished utilizing deep wells. Any proposed project activities in the lower watershed will not have an effect upon this water source.

Mineral Resources: There is no commercial mining activity in the watershed at present. Extraction of mineral resources will not be pre-empted by project activities.

Archaeological and Historical Resources: Archaeological surveys were conducted along Lower Silver Creek in 1973 and 1975 (4, 5). No evidence of archaeological sites was found. An archaeological and historical records search conducted in 1982 revealed no recorded archaeological, National Register of Historic Places, or California Historical Landmark sites within or adjacent to the project area.

Recreation: The two options for increasing the recreational opportunities previously mentioned in this report were explored early in the planning process and eliminated. With respect to recreational development along the creek, neighborhood meetings, surveys, and interviews with community leaders revealed strong opposition. Concerns were expressed over trespassing, vandalism, and other criminal acts resulting from public access to facilities along the creek.

The option of altering the master plan for Lake Cunningham to accelerate the planned recreational development and incorporate additional floodwater storage was discussed with the city of San Jose and the sponsors. Representatives of the local administering agencies requested that no activities be undertaken that might change the master plan for the lake or affect the operation and maintenance (O&M) plans for the facility since these plans were a result of lengthy coordination and public participation efforts (6, 7).

Existing Resources

An inventory and analysis of resources within the watershed that could be affected by any proposed alternatives were made. A description with baseline information on these resources important to decision making follows.

Economic: The Lower Silver Creek floodplain is 95 percent urbanized. An inventory of buildings located in the floodplain was conducted in early 1980 and updated in late 1981. A summary of the inventory appears below.

TABLE E
INVENTORY OF BUILDINGS LOCATED
IN FLOODPLAIN

Type of Building	Number of Buildings
Residential:	
Houses	3,420
Apartments	141
Commercial	155
Industrial	34
Schools and Churches	37
TOTAL	3,787

Approximately 2,200 of the houses in the floodplain are less than 20 years old with about 1,000 of these being less than 10 years old. The majority of these 2,200 houses are single story structures ranging in size from 1,000 to 1,600 square feet, are built on foundations, and have wood subflooring with first floors ranging from 15 to 24 inches from ground level. About 300 of these houses are built on concrete slabs directly on the ground. Another 900 to 1,000 houses were built 20 to 30 years ago. Most of these are single-story structures built on foundations. The remaining 300 to 400 houses were built prior to 1950. Very few houses in the floodplain have basements. The majority of houses have a market value ranging from $31,000 to $75,000 (excluding the lot value) with the median value being $48,000.

The 141 apartment buildings or condominiums range in height from one to three stories with most being one or two-story structures. There are three areas with large concentrations of apartment buildings. The first is along Capitol Expressway between Lake Cunningham and Story Road. These are all less than 10 years old and most are two-story, slab foundation structures. Another large group is located off McKee Road along El Rancho Verde Drive. These buildings are also two-story structures built on slabs. The last large concentration of apartments is located near the confluence of Lower Silver Creek and Coyote Creek. These are also two-story buildings but are built on foundations. The remaining apartments are scattered throughout the floodplain.

The majority of the 155 commercial buildings are located along Story Road, Alum Rock Avenue, and McKee Road. Most of these buildings are built on concrete slabs a few inches off the ground. Except for the buildings on Story Road, which are newer, the commercial buildings are 20 to 25 years old. Most are single story. Only a few have basements.

The majority of the industrial buildings are located in the industrial park located off Mabury Road on Lenfest Avenue. The majority of these buildings range in age from 1 to 20 years and many contain extremely high value goods, raw materials, and products. Most of these are built using tilt-up concrete and are constructed on concrete slabs. There is one other smaller industrial area located along the Western Pacific Railroad south of East Julian Street.

Demographic and Social Data: The Lower Silver Creek floodplain is in a densely populated, low income, urban area of San Jose. Comparative statistics between the floodplain, watershed, and the city of San Jose show the floodplain has a high proportion of minorities, children, and adolescents (Table F). The unemployment rate in the floodplain is higher than for the city of San Jose as a whole and the median household income is lower. All of these factors combine to give a picture of the floodplain population as one likely to suffer considerably from flooding conditions.

TABLE F
COMPARISON OF POPULATION CHARACTERISTICS (1980)

POPULATION CHARACTERISTIC	CITY OF SAN JOSE	WATERSHED	FLOOOPLAIN
Total Population	629,442	106,683	19,197
60 and Older (%)	8.9	7.6	8.4
19 and Younger (%)	34.9	38.0	40.0
9 and Younger (%)	16.2	20.3	20.6
Hispanic (%)	22.3	43.1	52.3
Other Minorities (%)	13.8	21.2	21.1
Unemployed (%)	7.5	11.0	13.8
Median Household Income	$22,756	$21,114	$18,381

Source: 1980 United States Census

Of the 5,771 housing units located in the floodplain, only about 46 percent are owner occupied (Table G). The high ratio of renters to owners, combined with low incomes and high unemployment, indicates that residential mobility is high. Neighborhood cohesiveness is low. This characteristic was confirmed during interviews with local residents. It is typical of transient neighborhoods.

TABLE G
COMPARISON OF HOUSING CHARACTERISTICS (1980)

HOUSING CHARACTERISTIC	CITY OF SAN JOSE	WATERSHED	FLOODPLAIN
Total Housing Units (Occupied)	209,593	30,584	5,571
Persons per Household	2.8	3.4	3.5
Single Family Homes (%)	70.1	64.7	61.5
Multiple Units (%)	29.3	32.5	38.1
Owner Occupied Units (%)	62.0	65.8	46.4
Mobile Homes (%)	3.8	2.8	0.4

Source: 1980 United States Census

Foxdale Manor, a 287-unit subsidized apartment complex located off Capitol Expressway between Story Road and Ocala Avenue, has a population of approximately 1,000, of which 400 are children. Two housing complexes for the elderly are located in the floodplain. Villa de Guadalupe Apartments are located off Alum Rock Avenue and Hidden Brooks Retirement Apartments are located on Wooster Avenue. These two complexes total 300 units with a population of about 400. About 150 of these people are on some form of low income assistance.

Three elementary schools and one junior high school are located in the floodplain. Total enrollment in the four schools is about 2,200.

Biological: The lower watershed is highly urbanized and provides little habitat for wildlife except for those species that can coexist with man in backyard landscaping.

Lower Silver Creek, as it exists today, is a man-made intermittent stream and contains only a few species of fish. These survive during the summer months in pockets of water or recolonize the creek from Coyote Creek. Species that have periodically been observed are roach, three-spine stickleback, hitch, goldfish, fathead minnow, and mosquito fish.

Wildlife along Lower Silver Creek downstream of Lake Cunningham is limited to only a few species. Permanent residents include bullfrogs, Pacific treefrogs, and Norway rats. Several species of birds forage in the trees along the creek, particularly in the area downstream of Wooster Avenue. Greater egrets are occasionally observed in the creek feeding upon crayfish.

Plant succession along Lower Silver Creek has been retarded by maintenance activities as well as previous construction along the channel. From Lake Cunningham to Wooster Avenue, the riparian vegetation is composed of a few scattered trees such as black walnut, willows, Fremont cottonwood, and lombardy poplars intermixed with herbaceous annuals. Except for the black walnuts, most of these trees are below 6 feet in height and are found along the inside channel banks. The black walnuts are found along the upper rights-of-way adjacent to backyard fences. The last 1,000 feet of Lower Silver Creek between Wooster Avenue and Coyote Creek supports the most diverse riparian system. In addition to the plants mentioned above, the vegetation is composed of box elder, sycamore, coyote bush, poison oak, and California wild rose. The trees are periodically cut and the vegetation has not reached heights much greater than 12 feet, therefore providing little vertical diversity (Figure 3).

Cattails and tules are also present in the channel bottom. They are also found in the concrete-lined sections where sediment has accumulated. This vegetation is removed every few years when the channel is cleaned out.

Several of the tributaries to Lower Silver Creek have mature riparian trees. Thompson Creek contains the most complex riparian community in the lower watershed. Mature willows, cottonwoods, black walnuts, and coastal live oaks provide habitat for many species of birds. This habitat is important to wildlife considering that the adjacent areas have been converted to residential and commercial developments.

The foothill regions of the upper watershed are not intensively developed and still contain a variety of plant communities such as chaparral, oak woodland, grassland, and riparian. There is a high diversity of wildlife in this area including raptors, songbirds, California quail, fox, raccoon, opposum, black-tailed deer, striped skunk, bullfrog, Pacific tree frog, arboreal salamander, California slender salamander, California king snake, gopher snake, Pacific rattlesnake, and western fence lizard.

Many wetlands within the watershed were drained when the area was developed. An extensive Type 3 wetland was created in Lower Silver Creek when the channel was enlarged from its confluence with Thompson Creek to Lake Cunningham. Lake Cunningham provides about 50 acres of open water (Type 5 wetland) which provides resting areas for waterfowl and gulls.

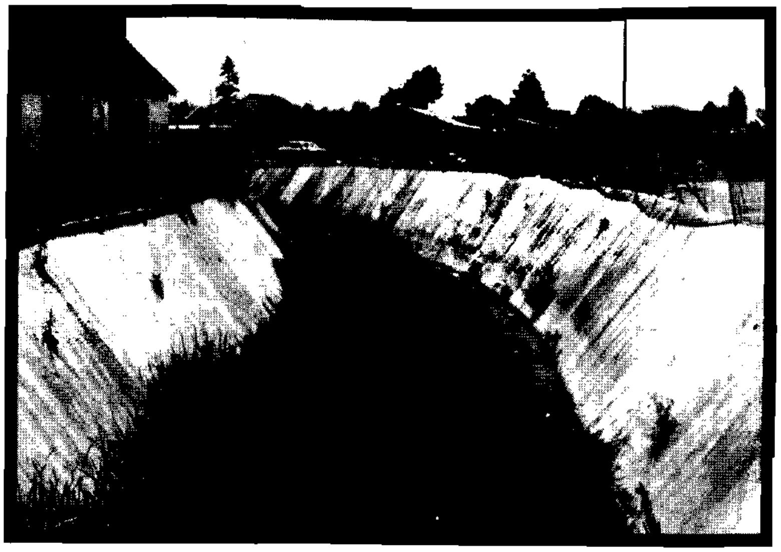
Visual: The visual quality of the watershed ranges from scenic in the upper reaches to barren in the lower reaches (Figure 4). Meandering streams with riparian trees and shrubs are typical of the upper watershed. Much of this area is scenic with rolling hills, mature native oaks, and scattered residences.

Closer to the city limits the vegetation along many of the streams provides a visual barrier between neighborhoods. This vegetation provides privacy, shade, windbreaks, and aesthetic qualities to residential areas that border the streams. Along Thompson Creek, setback levees have been constructed allowing the mature riparian trees and shrubs in the existing channel to remain. The open space between the levees and creek is used for recreation.

Lake Cunningham, designed for flood storage and recreation, provides variety in the landscape due to the creation of wetlands, landforms, masses of new trees, open space, and ponded water.

Vegetation found in the earth section of channel between Wooster Avenue and Coyote Creek.

Cattails and other aquatic plants grow in the silt that has accumulated in concrete sections of channel. This vegetation is removed periodically.

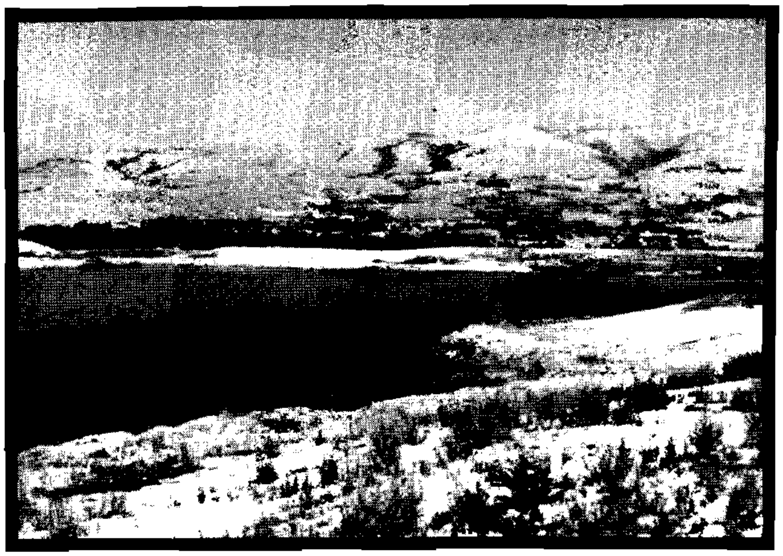


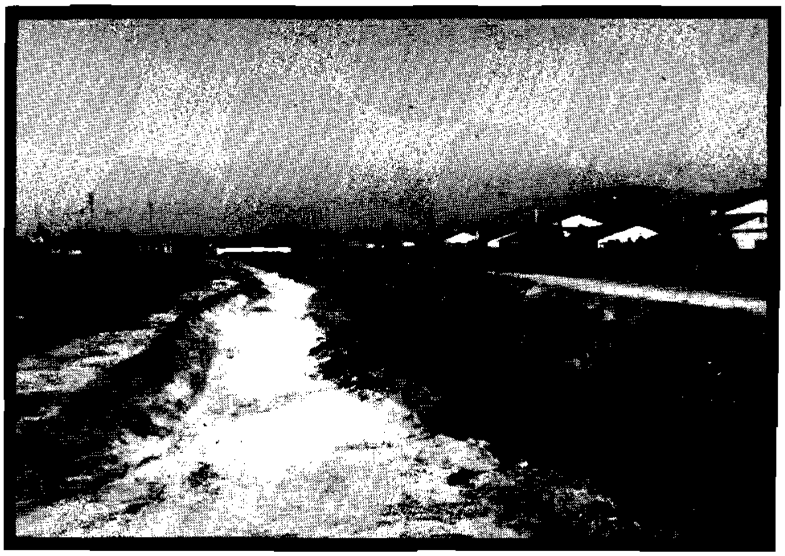
Lower Silver Creek upstream of Lake Cunningham. Creek was enlarged in 1979 resulting in an increase of Type 3 wetlands.

FIGURE 3

Mature riparian vegetation along Thompson Creek in upper watershed.

Lake Cunningham, located in an urban area, provides variety in the landscape.





Bare earth channel downstream of Lake Cunningham.

FIGURE 4

Lower Silver Creek downstream from Lake Cunningham to Interstate 680 is unsightly. Sections of the creek banks are eroding and void of vegetation. Maintenance for flood control has kept tree growth down. The creek is highly visible to passing pedestrians, and from autos and adjacent backyards and houses.

In the denser residential areas, trees located in backyards overhang the creek, providing shade and a visual screen. Smaller trees and shrubs are growing on the side of the channel not used for maintenance access. Wetland vegetation has become established in the channel bottom.

Where Lower Silver Creek borders Mathson School, Mayfair Park, and Plata Arroyo Park, the creek has become part of the school or park experience. The creek at these points narrows and then widens providing areas of wetland vegetation. The few riparian trees and shrubs provide an aesthetic contrast to the urban surroundings, compliment the park atmosphere, and provide both wildlife habitat and opportunities for nature study.

As Lower Silver Creek approaches Coyote Creek, it separates a residential area from an industrial park. The existing riparian corridor along Coyote Creek effectively reduces wind and noise.

Erosion and Sedimentation: About 85 percent of the total erosion in the watershed occurs on the rangeland in the upper watershed (Table H). Erosion rates of 0.1 to 9.3 tons per acre per year occur. These rates could increase by a factor of 10 should wildfires occur prior to the rainy season. However, the California Department of Forestry (CDF), assisting the county, SCVWD, and the city of San Jose, has good fire prevention and control programs in the watershed. Also, wildfire is not a common problem in the watershed. Over the past six years, 28 fires involving 500 acres occurred. Most of these fires were grassfires.

TABLE H
AVERAGE ANNUAL
EROSION AND SEDIMENT YIELD (1990)

Source	Erosion		Sediment Yield to Coyote Creek	
	(Tons/Year)	(Percent)	(Tons/Year)	(Percent)
Sheet and Rill				
Rangeland	27,560	85	11,500	77
Urbanizing Land				
Residences	790	2	530	4
Roads and Driveways	770	2	520	3
Urban Land	750	2	500	3
Open, Unimproved Land in Urban Service Area	470	2	310	2
Streambanks	440	2	420	3
Gullies	160	1	120	1
Existing Roads	1,330	4	1,020	7
TOTAL	32,270	100	14,920	100

The SCVWD has installed or is in the process of installing seven debris basins for the primary purpose of controlling sediment from burned or urbanizing areas in the upper watershed. These debris basins are all scheduled to be installed prior to the installation of any proposed project actions. On an average annual basis, these basins trap 6,890 tons of sediment from 4,092 acres. Sediment yields from rangeland and urbanizing land (Table H) include sediment reductions due to the installation of the basins and the on-going land treatment program of the Evergreen Resource Conservation District (ERCD). Of the 12,600 acres of hillside and rangeland, 70 percent is adequately treated.

The 14,920 tons of sediment (Table H) is the sediment yield to Coyote Creek. On an average annual basis, 6,890 tons are deposited in the debris basins, 90 tons in Lake Cunningham, and 970 tons on the floodplain. For specific storm events, sediment values will vary (Table I).

TABLE I
SEDIMENT DEPOSITION BY FLOOD FREQUENCY (1990)

Flood Frequency (Years)	Sediment Deposition (Tons)			Sediment Yield to Coyote Creek (Tons)
	Debris Basin	Lake Cunningham	Floodplain	
10	16,110	110	2,610	33,280
25	25,760	810	6,970	46,380
50	32,200	1,270	11,320	57,770
100	38,640	2,110	20,080	68,920
500	38,640	5,020	35,790	126,570

Downstream Areas: Coyote Creek, from its confluence with Lower Silver Creek, flows 18 miles before it empties into San Francisco Bay. Along the way Upper and Lower Penitencia Creeks flow into it. The capacity of Coyote Creek is severely limited as it nears the bay. The area downstream of Highway 17 frequently floods due to the insufficient channel capacity.

Part of the San Francisco Bay National Wildlife Refuge is located where Coyote Creek empties into the bay. The refuge provides habitat for two listed endangered species, the salt marsh harvest mouse and California clapper rail.

Forecasted Conditions

The resources inventoried in the preceding section could change in the future. Since the planning period for this study is 100 years, the conditions of these resources were projected into the future. These projections were made to:

- --insure that the design of a plan will take into account the resource conditions that are most likely to exist in the future and,
- --Serve as a baseline in evaluating the effects of the solutions over their expected life.

Economic: No forecasting of changes within the floodplain was made. The buildings are relatively new and will be maintained throughout the planning period. No hydrologic changes are forecasted to take place in the watershed during the planning period that would impact the floodplain. Therefore, the existing developments in the floodplain served as the basis for the calculation of damages. This base was adjusted by using OBERS projections (see Glossary) for future changes in the value of residential contents.

Demographic and Social: According to the Association of Bay Area Governments, the population in Santa Clara County is projected to increase by 341,000 people by the year 2000 (8). Although the San Jose area is expected to absorb about 200,000 of these people, the Lower Silver Creek watershed will accommodate only a small percentage of this number as there are only about 2,000 acres remaining to be developed. This area is located in the transition zone outside the floodplain.

The floodplain is expected to maintain a high proportion of minorities. Although the ethnic background or age distribution could change, the impact of floods would still be on low income minority groups. Therefore, existing conditions were used to evaluate the social effects of the alternative plans.

Biological: The oak woodlands, orchards, and other open lands will continue to be lost to urban development in the foothill region. The tributaries above Lake Cunningham will be developed to accommodate a 100-year flood. This may result in degradation of the existing riparian systems. However, the County General Plan indicates that efforts will be made to retain the existing riparian systems.

Lower Silver Creek downstream of Lake Cunningham will essentially remain as it exists today. Periodic removal of vegetation inside the channel banks to maintain channel capacity will continue. Perennial vegetation outside the channel banks will be allowed to remain.

Visual: The visual quality can be expected to decline in the urbanizing areas of the upper watershed. The development of the tributary streams above Lake Cunningham will reduce the visual quality of these streams. The landscape downstream of Lake Cunningham will remain as it exists today.

Erosion and Sedimentation: Some slight reductions in erosion and sedimentation can be expected to occur after development is completed in the urbanizing foothill areas of the upper watershed. Through existing county and city regulations and the on-going land treatment program, erosion sources such as roadbanks, gullies, and residential lots will be stabilized with vegetative cover. The CDF will continue to provide fire prevention and control programs in the watershed.

The ERCD will continue to implement the on-going land treatment program with assistance from the Soil Conservation Service. The following practices are recommended (Table J).

TABLE J
LAND TREATMENT PROGRAM

Practice	Unit	Amount
Proper Grazing	Acres	7,000
Range Seeding	Acres	300
Access Road	Feet	2,000
Spring Development	Number	10
Trough or Tank	Number	12
Wildlife Upland Habitat Management	Acres	80
Fencing	Feet	12,000
Stock Trails	Feet	8,000
Critical Area Planting	Acres	5

These conservation practices will maintain and improve the cover on the uplands. This will benefit natural water penetration, reduce erosion 30 percent, reduce siltation 33 percent, improve hydrologic conditions, and will result in some wildlife enhancement. No acceleration of the program is proposed.

FORMULATION of ALTERNATIVES

FORMULATION OF ALTERNATIVES

Introduction

Alternatives were formulated to meet the problems and concerns described in the Problems and Opportunities and Inventory and Forecasting sections. During the formulation process, consideration was also given to current local, state, and federal policies and guidelines. These policies and guidelines are founded on the basic premises that the plan be economically feasible, environmentally acceptable, and safe.

Plan formulation was accomplished in three phases. The first phase was to identify measures or various means of solving the identified problems. Solutions were formulated taking into account the resource capabilities, public concerns, and forecasted changes. Measures included two broad categories, nonstructural and structural. These measures were tested for their effectiveness in solving the flooding problems in an economically and environmentally acceptable manner.

The second phase of formulation consisted of developing alternatives. Those measures that remained after the first phase were analyzed in greater detail and refined into alternatives. The alternatives contained both individual measures as well as combinations of measures. These alternatives were then evaluated to determine which ones best met the formulation criteria. Those that survived this screening became candidate plans.

The third phase consisted of comparing the candidate plans and identifying a preferred or recommended plan.

Measures

Several different measures were investigated to determine their effectiveness in solving the flooding and related problems. Erosion in the watershed is being adequately treated by the on-going land treatment program of the ERCD and existing county and city regulations. Based on the topograpy of the watershed, upstream land treatment measures to reduce runoff would only have a minimal effect on reducing the flooding problem. Therefore, none were considered. The following nonstructural and structural measures were investigated during the formulation process.

Nonstructural Measures: Zoning of the floodplain was dropped from further consideration because this technique would not reduce the potential for damages to existing development in the floodplain. The remaining 5 percent of undeveloped land must meet Federal Insurance Administration regulations. One of the regulations require that any newly constructed building must have a first-floor elevation above the 100-year floodline.

Acquisition of vacant parcels in the floodplain proved economically infeasible. Land costs in the floodplain range from $3.00 per square foot for residential lots to $7.00 per square foot for commercial lots.

The relocation of homes to areas outside the floodplain was investigated and found to be economically feasible in a few instances. This measure was retained for use in formulating alternatives.

Floodproofing of structures was investigated. This included elevating structures, building perimeter walls around properties, building protective walls around structures, and applying waterproof sealant. These measures all proved to be economically feasible in some situations.

A floodwarning system was not analyzed separately but was deemed necessary in combination with the other feasible nonstructural measures.

Structural Measures: Several potential upstream floodwater retarding dam sites were investigated. However, because of topographic limitations, the dam sites provided too little storage for flood control.

An off-channel floodwater retarding structure was investigated that would divert high flows from Thompson Creek into an excavated reservoir. This measure was dropped from further consideration because it was economically infeasible.

The possibility of using Lake Cunningham for additional floodwater storage above the 590-acre feet currently provided was also investigated. Several enlargement options were investigated. However, high land rights costs, topographic site limitations, and a high ground water table prevented further consideration of any of these options because of either economic infeasibility or physical limitations.

Channel enlargement of Lower Silver Creek was investigated. Several different channel enlargement schemes accomodating various flood flow capacities were analyzed. All proved to be economically feasible and were retained for use in formulating alternatives.

Alternatives

Two alternatives were developed using the feasible measures identified on the previous pages. These alternatives meet the current local, state, and federal regulations and guidelines. They also satisfy, to varying degrees, the concerns established during the scoping of watershed problems and needs. A description of how these measures were formulated and a description of each alternative follows. A "no project" alternative is also included as a potential course of action.

Alternative 1--No Project: This alternative consists of taking no action to reduce the flooding problems along Lower Silver Creek. Total average annual flood damages estimated at $1,782,700 would continue to occur. A 100-year flood would cause significant damage to 1,305 residences, 73 businesses, 17 industrial buildings, 2 churches, and 15 school buildings resulting in damages of $26,818,100. Damages of $3,973,100 would occur to an estimated 3,400 motor vehicles. Additional costs, estimated at $876,400 for sediment cleanup operations, emergency services, road closures, and rerouting of traffic would also occur. Total damages, therefore, from a 100-year flood are estimated to be $31,667,600.

Floodplain residents would continue to face personal hardships from flooding. For many floodplain residents the threat of loss of life due to flooding would continue. Transportation routes would continue to be subject to flooding, hindering emergency services and causing traffic delays.

The channel capacity downstream of Lake Cunningham would remain unchanged. Periodic operation and maintenance activities to maintain this capacity would remove vegetation along the inside channel banks.

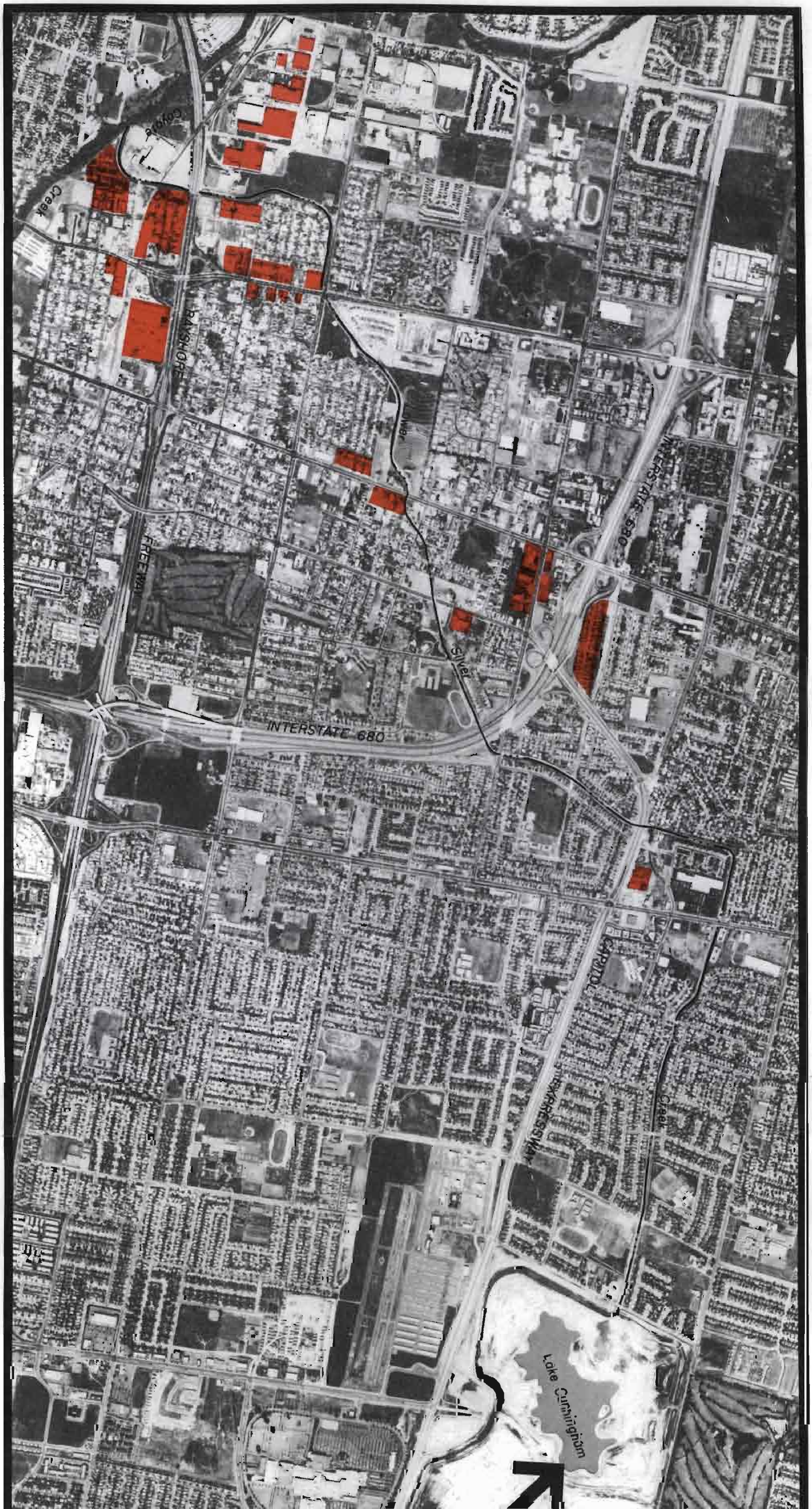
Alternative 2--Nonstructural Floodplain Protection: A feasible nonstructural plan could not be developed that would protect every building in the floodplain. Therefore, criteria was developed that divided the floodplain into 50 zones of similar structures.

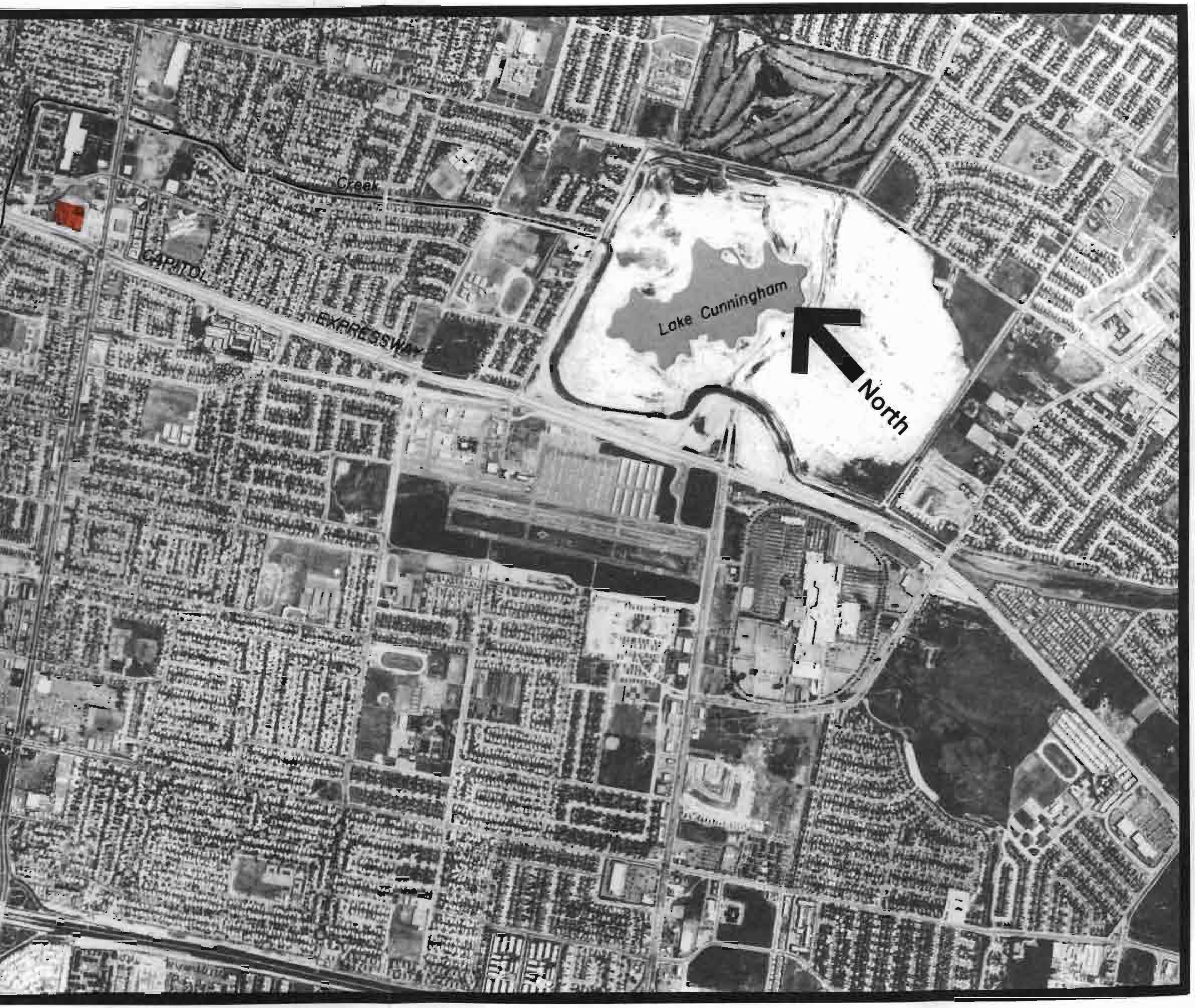
The costs and benefits of providing protection to each zone from a 10, 25, and 100-year flood were evaluated. If a zone had positive net benefits, then all structures in that zone were protected using various nonstructural measures. The 100-year level of protection produced the highest level of net benefits and was developed as the nonstructural alternative.

This alternative (Figure 5) would include the following measures to reduce flooding:

(1) Perimeter walls
(2) Protective walls
(3) Elevation of residences
(4) Relocation of residences
(5) A floodwarning system

Floodproofing individual properties would involve the construction of perimeter walls around 5 commercial and industrial properties, elevating 35 residences, and installing protective walls around 157 buildings. All landscaping disturbed during installation would be repaired or replaced. One-way sewer valves would be installed in conjunction with these measures. All low-level entrances and windows would be equipped with portable floodshields in the buildings protected by perimeter and protective walls. Ten residences would be relocated to areas outside the floodplain. This would require the acquisition of 1.7 acres to relocate the residences.


Coyote
Creek
BAYSHORE
FREEWAY
Silver
Creek
Silver
INTERSTATE 680
INTERSTATE 680
CAPITOL
EXPRESSWAY
Creek
Lake Cunningham



Legend

🟥 Areas Containing Buildings to be Protected with Nonstructural Measures

Lower Silver Creek Watershed Project

Alternative 2-Nonstructural Floodplain Protection Map

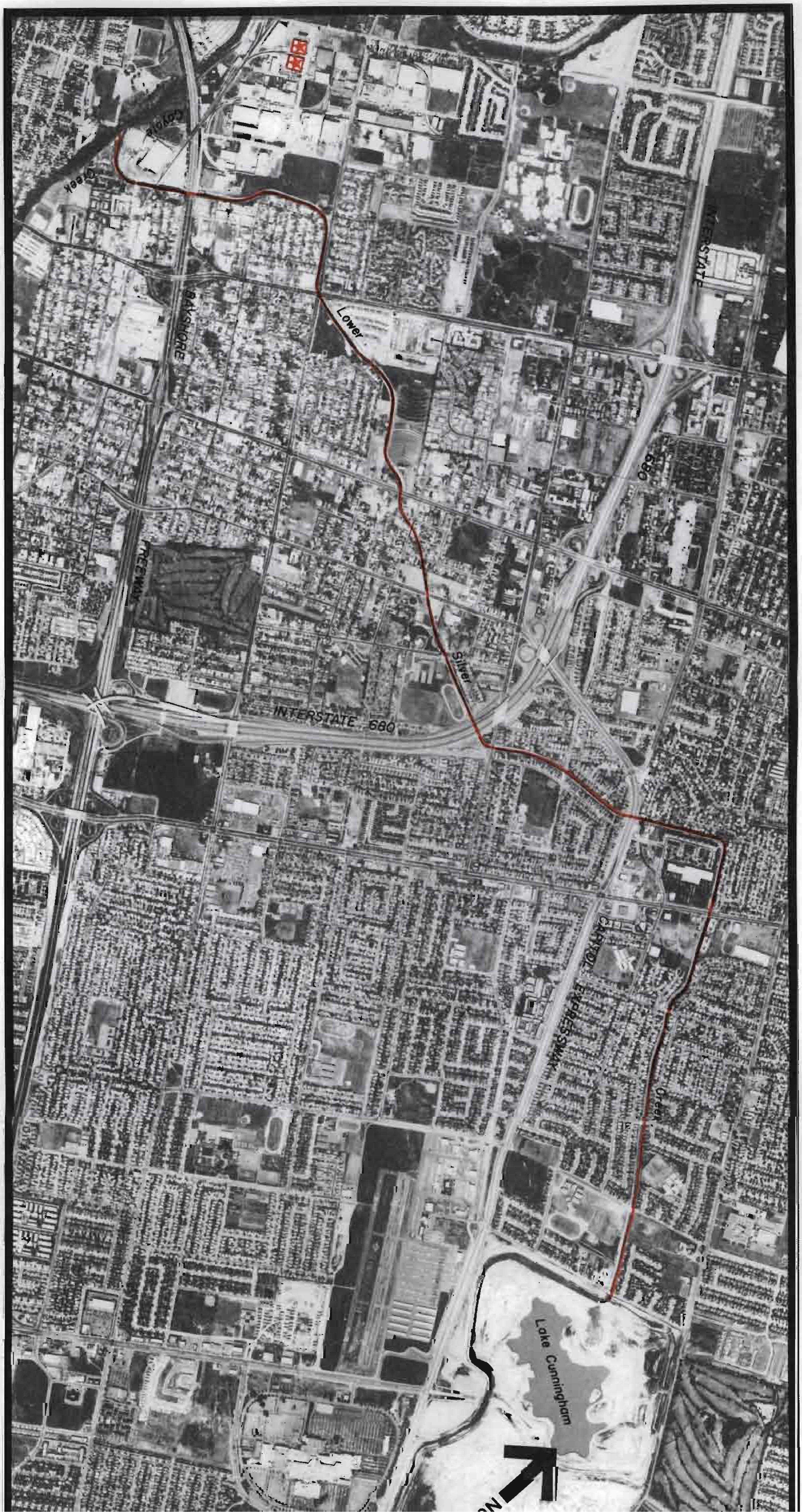
Santa Clara County, California

November 1982

Scale: 1"=1500'

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Figure 5.


Coyote
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Lower
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INTERSTATE
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EXPRESSWAY
Lake Cunningham
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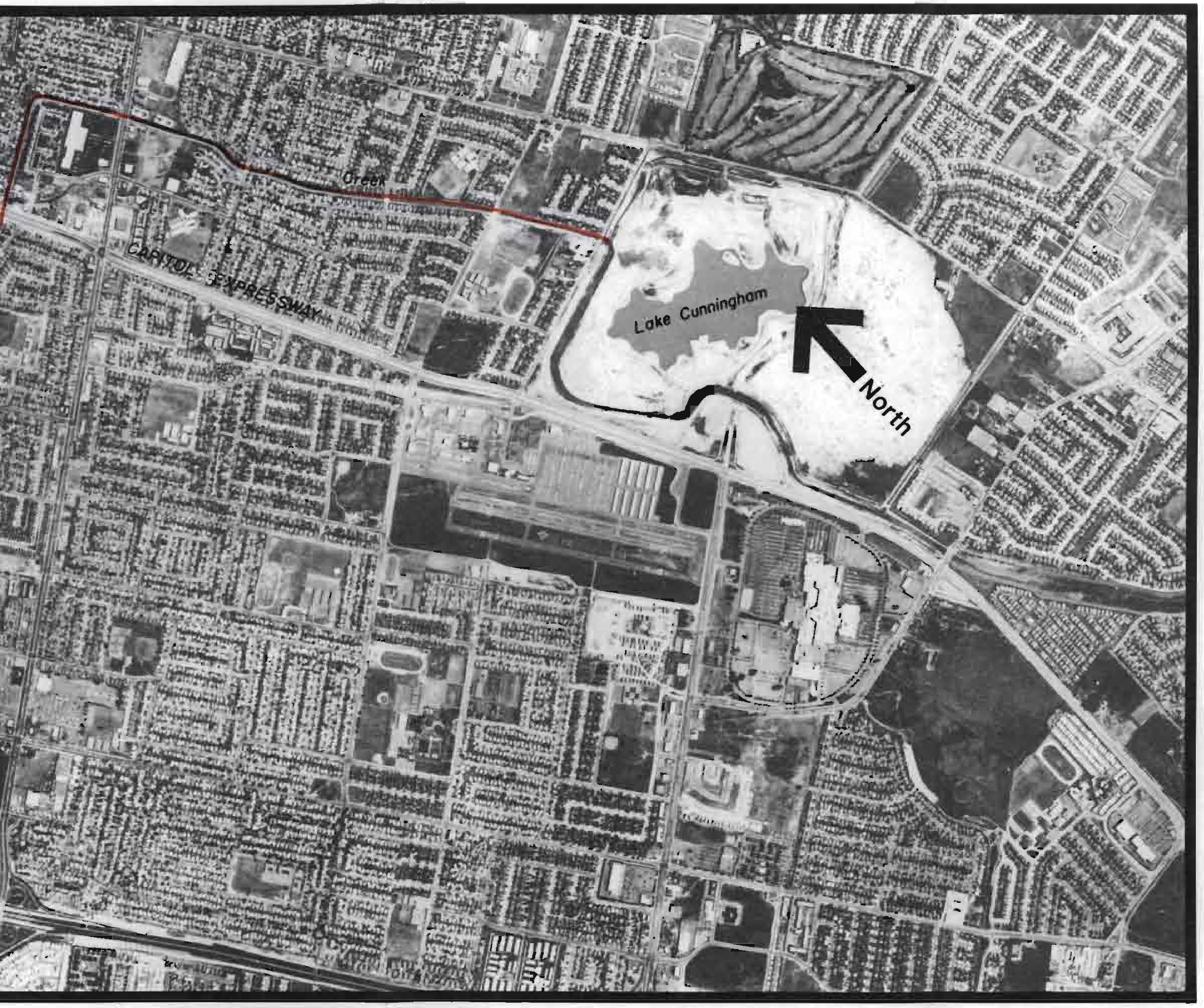

Legend

— Channel Work

🟥 Areas Containing Buildings to be Floodproofed

Lower Silver Creek Watershed Project

Alternative 3- Channel Work and Floodproofing Map

Santa Clara County, California

November 1982

Scale: 1"=1500'

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Figure 6.

The floodwarning system would consist of a system of gauges on Thompson Creek and Lake Cunningham, and a warning system to alert local residents of impending dangers due to flooding. The system would also alert residents with protective or perimeter walls around their property to install the portable floodshields.

Operation and maintenance of this alternative would involve a program of education, inspection, upkeep, and replacement of the protective measures.

The estimated installation cost of this alternative would be $3,010,000. The average annual cost including O&M and interest expense accrued during installation would be $328,800. Average annual benefits would include a damage reduction of $634,800 and a savings in future costs of $1,100. The benefit-cost ratio would be 1.9 to 1.0. Remaining average annual damages would be $1,147,900.

Alternative 3--Channel Work and Floodproofing: The only structural measure found to be economically feasible was channel enlargement. The costs and benefits of providing protection from the 25, 50, 100, and 500-year flood events were evaluated. The 100-year level of protection produced the highest level of net benefits. In this alternative channel work was applied as the first increment. Structures in areas where residual flood damages remained were then analyzed using the criteria developed for formulating the nonstructural alternative. If a structure had positive net benefits, it was included as an additional increment of this alternative.

This alternative (Figure 6) would consist of modifying the Lower Silver Creek channel system from its confluence with Coyote Creek upstream to Lake Cunningham.

Structural measures would include:

(1) Excavated earth channel along 0.87 miles of creek

(2) Reinforced concrete lined channel along 3.77 miles of creek

Nonstructural measures would include:

(1) Floodproofing 2 buildings

The excavated earth channel would be trapezoidal. The concrete sections of channel would include 0.47 miles of retangular channel and 3.3 miles of trapezoidal channel. The channel capacity would vary from 3,600 cubic feet per second (cfs) at Lake Cunningham to 6,100 cfs at the confluence with Coyote Creek.

One grouted rock drop structure would be provided. Drainage inlets would be provided to allow drainage and storm runoff to enter the channel. Four bridges that are no longer in use would be removed and one pedestrian bridge would be installed. Three box culverts would be improved.

The channel rights-of-way would vary in width from 58 to 150 feet. In addition to the existing rights-of-way, another 5.6 acres would be required. The entire length of the concrete-lined channel would be enclosed with fences.

Floodproofing would consist of applying waterproof sealant on the lower 2 feet of walls on 2 industrial buildings. Portable floodshields would also be installed on all doors of the buildings and one-way sewer valves would be installed on all sewer lines leading from the buildings to the city sewer system.

This alternative would result in the removal of 4.6 acres (3.3 Habitat Units) of scattered trees and weedy annuals along the channel. Habitat Units (HU) are a unit of measure derived by multiplying habitat quantity (acres) by habitat quality (as determined by environmental assessment team). There would be an increase of 8.9 acres of wetland habitat. However, 1.0 Habitat Unit would be lost as most of this wetland acreage (6.1) would be within concrete sections with very low habitat quality. The loss of these HU's would be mitigated with plantings of trees and shrubs that are beneficial to wildlife and aesthetically pleasing.

NO PAGES
49 OR 50

The estimated installation cost of this alternative would be $13,954,000. This includes the cost of mitigation measures to compensate for environmental damages that would occur. The average annual cost including O&M and interest expense accrued during installation would be $1,262,600. Average annual benefits would include a damage reduction of $1,587,300 and a savings in future costs of $29,000. The benefit-cost ratio would be 1.3 to 1.0. Remaining average annual damages would be $195,400.

Candidate Plans

Candidate plans are those alternatives that meet the formulation criteria. The No Project Alternative does not solve the problem and therefore, is not a candidate. Alternatives 2 and 3 qualify as candidate plans and could be selected as the recommended plan. They will be referred to as Plans 1 and 2 in the following sections.

Table K summarizes the features and impacts of the two candidate plans. The no project conditions are included only to serve as a baseline in comparing the plans.

Project Interaction

Plan 1 does not interact with any other known federal, state, or local existing or planned projects in the Lower Silver Creek Watershed.

Plan 2 would interact with the local plan involving the existing Cunningham Recreation Lake. The lake is designed to temporarily store 590 acre-feet of floodwater and to discharge the remaining water (3,600 cfs at the 100-year event). The channel work contained in Plan 2 has been designed to accept this discharge from the lake. Of the four levels of protection evaluated (25, 50, 100, and 500-year), this plan is the one that produces the highest level of net benefits.

Plan 2 would also protect the existing federally subsidized housing project, Foxdale Manor, from a 100-year flood. Currently, buildings located in the Department of Housing and Urban Development subsidized project would flood at the 100-year event.

TABLE K
SUMMARY AND COMPARISON OF CANDIDATE PLANS

PROJECT FEATURES/IMPACTS	NO PROJECT	PLAN 1 NONSTRUCTURAL	PLAN 2, CHANNEL WORK AND FLOODPROOFING (NED PLAN)
Installation Cost ($)			
PL-566	0	2,408,000	12,223,000
Local	0	602,000	1,731,000
Total Installation Cost ($)	0	3,010,000	13,954,000
Average Annual Installation Cost ($)			
PL-566	0	189,700	963,000
Local	0	47,400	136,400
Average Annual O&M Costs ($)	57,500	70,800	65,100
Total Average Annual Cost ($)	57,500	328,800[1]	1,262,600[1]
Average Annual Benefits ($)	0	635,900	1,616,300
Net Benefits ($)	0	307,100	353,700
Benefit/Cost Ratio	N/A	1.9:1.0	1.3:1.0
Average Annual Damage Reduction (%)	0	36	89
Floodwater Reduction	No additional buildings protected	207 buildings protected at 100-year event	1,272 buildings protected at 100-year event
Remaining Buildings Flooded	1,412	1.205	140
Remaining Average Annual Damages ($)	1,782,700	1,147,900	195,400
Additional Rights-of-Way Needed (Acres)	0	1.7	5.6
Residences Relocated	0	10	0
Streambank Erosion	Streambank erosion averaging 40 tons per year	Streambank erosion averaging 40 tons per year	Streambank erosion eliminated
Sediment	20,080 tons deposited on floodplain at 100-year event	20,080 tons deposited on floodplain at 100-year event	140 tons deposited on floodplain at 100-year event
Transportation	Flooding of 9 major roadways at 100-year event	Flooding of 9 major roadways at 100-year event	2 major roadways closed at 100-year event
Human Health and Safety	Life threatening hazard to inhabitants of 621 homes, 1 apartment complex, and 1 school at 100-year event.	Life threatening hazard to inhabitants of 611 homes, 1 apartment complex, and 1 school at 100-year event.	Life threatening hazard to inhabitants of 13 homes at 100-year event.
Visual	Continuation of present conditions	Floodwalls around 167 buildings; 35 residences elevated; 10 residences relocated	3.77 miles of concrete channel 0.87 miles of earth channel
Downstream Areas	Continuation of present conditions	Continuation of present conditions	Sediment Deposition on floodplain and into San Francisco Bay increase by 1.3 and 0.2 percent (average annual) respectively. No increase in flooding
Wetlands	Continuation of present conditions	Continuation of present conditions	Removes 1.0 Habitat Unit
Riparian	Continuation of present conditions	Continuation of present conditions	Removes 3.3 Habitat Units
Mitigation	N/A	None	Plant 6.6 acres of trees and shrubs

[1] Includes $20,900 for Plan 1 and $98,100 for Plan 2 in interest expense accrued during the installation period.

The U.S Army Corps of Engineers and SCVWD have both investigated corrective flood control measures along Coyote Creek. The Corps' studies all proved economically infeasible. However, SCVWD is still studying corrective measures for two areas on Coyote Creek. One area is upstream of the creek's confluence with Lower Silver Creek and the other is downstream of Highway 17.

Should corrective measures be installed in the upstream area, the residual floodplain that would result if Plan 2 were installed would most likely be reduced. However, this would not affect the benefits or costs attributable to this plan.

Should SCVWD install corrective measures in the downstream area, the increased sediment associated with Plan 2 that normally would be deposited on the downstream floodplain could be transported to San Francisco Bay. Corrective measures could be installed to trap this sediment, along with sediment from the entire Coyote Creek drainage area. It is expected that SCVWD will investigate the need for such measures.

No other known federal or nonfederal projects are planned on the Lower Silver Creek channel itself.

Risk and Uncertainty

The evaluations conducted were based on various assumptions about future conditions in the watershed. The assumptions made are generally conservative. The principal ones are discussed below.

1. Hydrologic calculations of surface water runoff were based on the assumption that the urban service area will be completely developed prior to installation of the project. The general plans of the county and city have zoned, and this study has assumed, that the hillside and rangeland area will be developed to a density of 1 residence per 20 acres. Should the urban service area not completely urbanize or allowable densities in the hillside area change, then surface water runoff rates could change. Differences in the runoff rate could either increase or decrease.

The estimated magnitudes and frequencies of flood flows are based on historical data. As more data is collected, values may change.

2. Estimates of damages and benefits to buildings and their contents were based on structures currently existing in the floodplain. The OBERS regional growth rate for per capita income was used as a basis for increasing the value of residential contents in the future. These growth rates are revised from time to time and may result in minor increases or decreases in the benefit levels listed.

3. Existing demographic data was used in evaluations concerning floodplain residents because of the uncertainty of predicting future demographic conditions.

4. Estimates of reductions in sediment yield assume that the on-going program of the ERCD will continue at its current level and city and county regulations concerning development will continue to be enforced.

5. Channel design for Plan 2 was based on soil test results and survey data obtained during project planning. At the time of final design, more detailed soils investigations and surveys will be conducted. It is possible that these could lead to changes in the design and that the actual construction quantities could vary from the present estimates. Differences could be either increases or decreases. The estimated construction cost has been increased 15 percent to allow for such contingencies.

6. Benefits calculated for Plan 1 assume the 162 properties protected by perimeter walls or protective walls would have the portable floodshields installed when flooding occurs.

7. Unit prices are based on bid prices of recent contracts brought to present levels using cost indices. Actual unit prices will depend on costs at the time each construction contract is awarded.

Rationale for Plan Selection

Plan 2, Channel Work and Floodproofing, was selected as the recommended plan. This plan best meets the formulation criteria. The plan provides the highest degree of protection and produces the highest level of net benefits. Adverse environmental impacts are mitigated. Design of this plan also minimizes social impacts.

RECOMMENDED PLAN

RECOMMENDED PLAN

Purpose and Summary

Plan 2, Channel Work and Floodproofing, is the recommended plan. This section describes the recommended plan in detail, mitigation measures, the costs involved, installation and financing procedures, and operation and maintenance requirements.

Plan Elements

This section describes the channel modification and floodproofing measures planned for reducing floodwater damages.

The channel modifications include several types of channel, including excavated trapezoidal earth, trapezoidal concrete, and rectangular concrete (Figure 7). Trees and shrubs will be planted along the earth sections and at several locations along the concrete sections.

Floodproofing, which applies to two industrial buildings, will consist of applying waterproof sealant on walls and installing portable floodshields and one-way sewer valves.

The following provides a brief description, by construction reach, of the proposed project. Structural data for the channel work is listed in Table 3B at the end of this section.

Reach I (0.76 miles)

-- 0.39 miles of excavated trapezoidal earth channel
-- 0.34 miles of trapezoidal concrete channel
-- 0.03 miles of rectangular concrete channel
-- 0.14 miles of levees at the outlet
-- 1 grouted rock drop structure near the outlet
-- 3.1 acres of biological mitigation plantings
-- Acquire 1.26 acres of additional rights-of-way
-- Floodproof two buildings

Reach II (0.24 miles)

-- 0.24 miles of rectangular concrete channel
-- 0.30 acres of landscape mitigation plantings

Reach III (1.33 miles)

-- 0.48 miles of excavated trapezoidal earth channel
-- 0.46 miles of trapezoidal concrete channel (includes 0.08 miles of architecturally treated concrete)
-- add floodwalls along 0.39 miles of existing trapezoidal concrete channel
-- 3.0 acres of biological mitigation plantings
-- add 8-foot by 13-foot box culvert to Alum Rock Avenue crossing
-- remove 4 abandoned bridges between Alum Rock Avenue and Interstate 680
-- install pedestrian bridge at Kammerer Avenue
-- relocate sports track and parking lot at Mathson School
-- acquire 4.35 acres of additional rights-of-way

Reach IV (0.9 miles)

-- 0.16 miles of rectangular concrete channel
-- 0.74 miles of trapezoidal concrete channel
-- replace double box culvert with triple box culvert at Jackson Avenue
-- add 12-foot by 12-foot box culvert to the existing double box culvert at Capitol Expressway
-- 0.20 acres of landscape mitigation

Reach V (0.6 miles)

-- 0.04 miles of rectangular concrete channel
-- 0.56 miles of trapezoidal concrete channel

Reach VI (0.81 miles)

-- 0.81 miles of trapezoidal concrete channel

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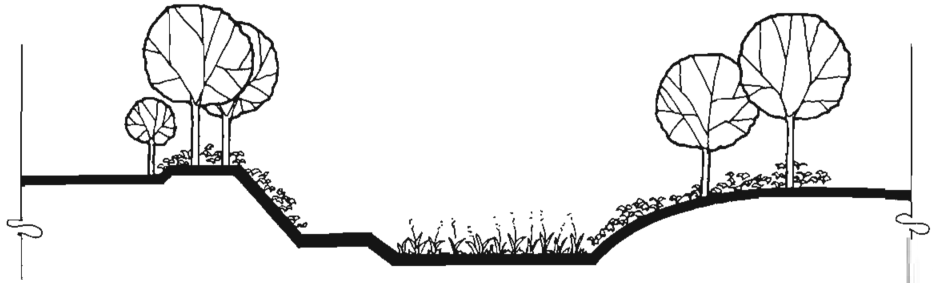
59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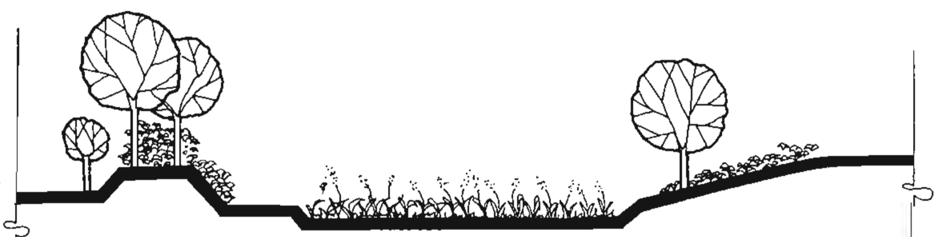
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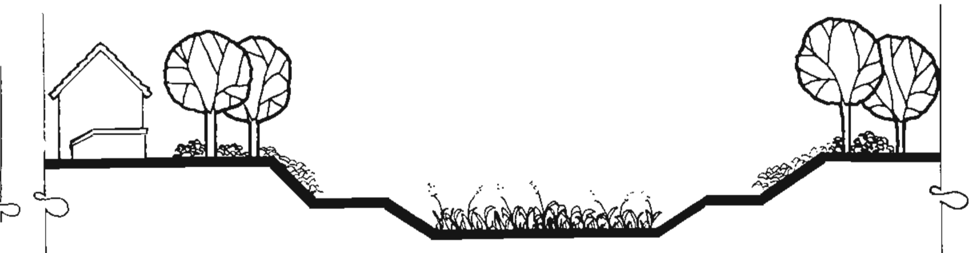
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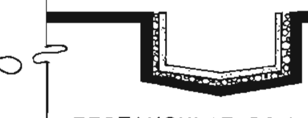
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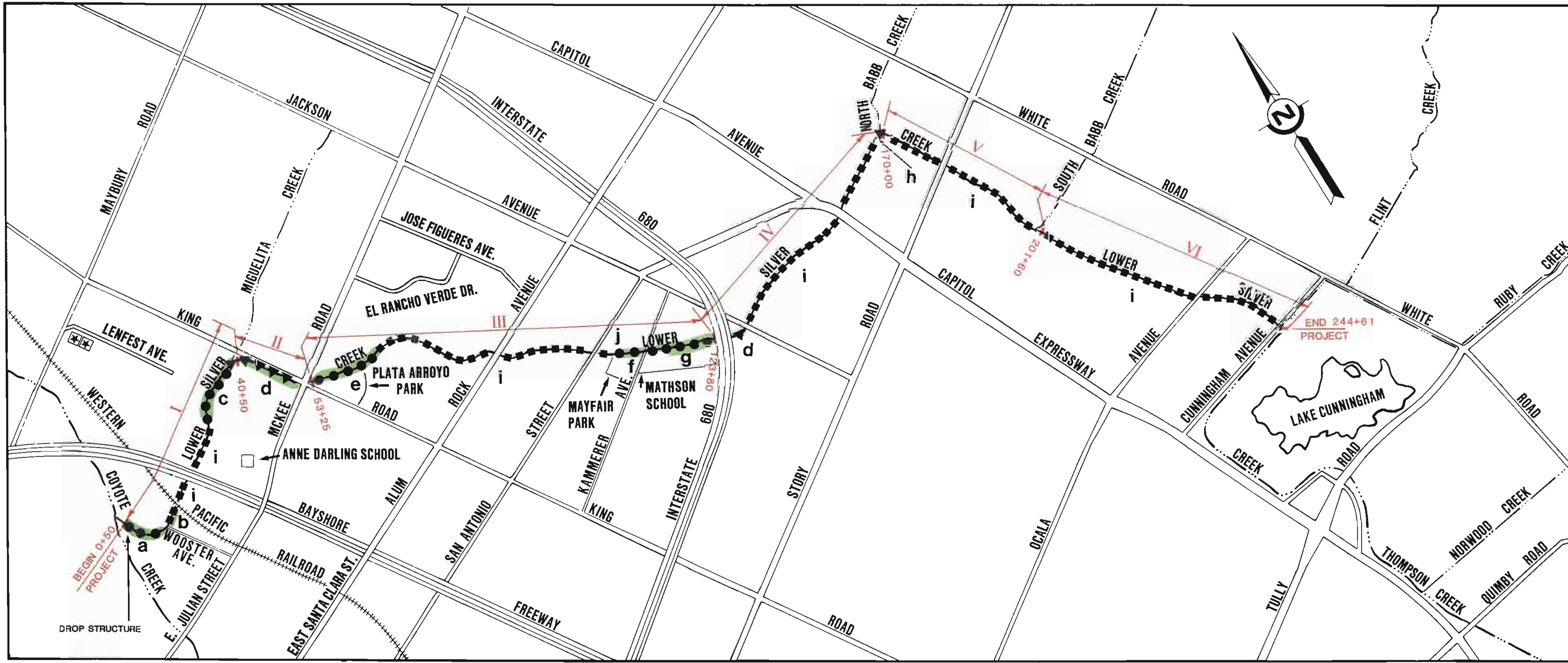
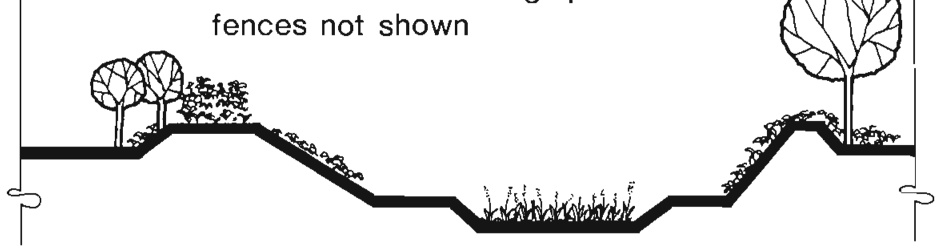


NOTE : all sections are looking upstream
fences not shown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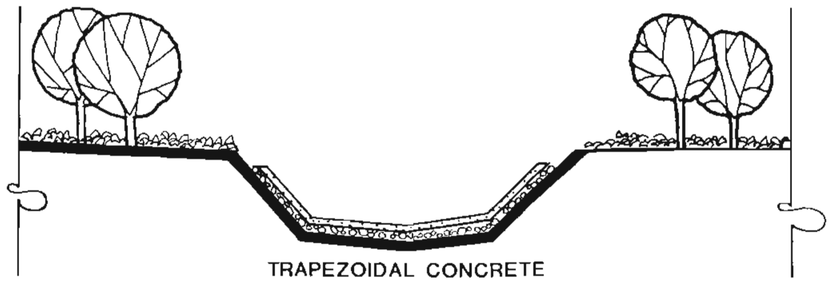
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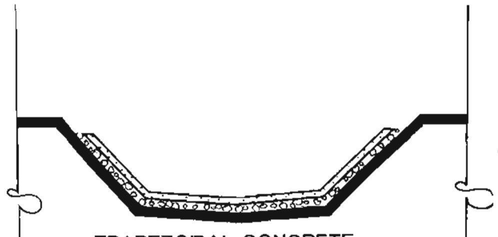
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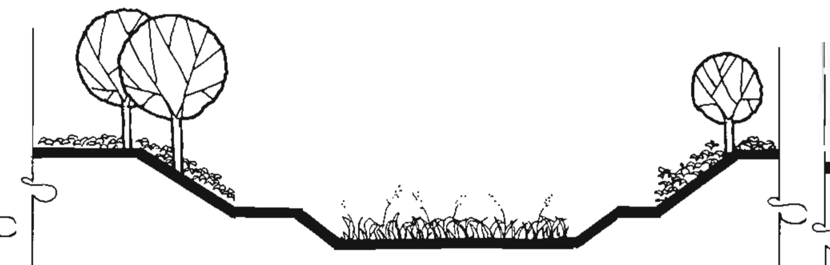
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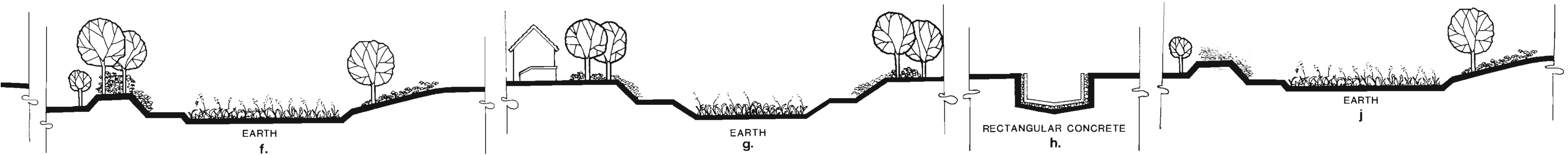

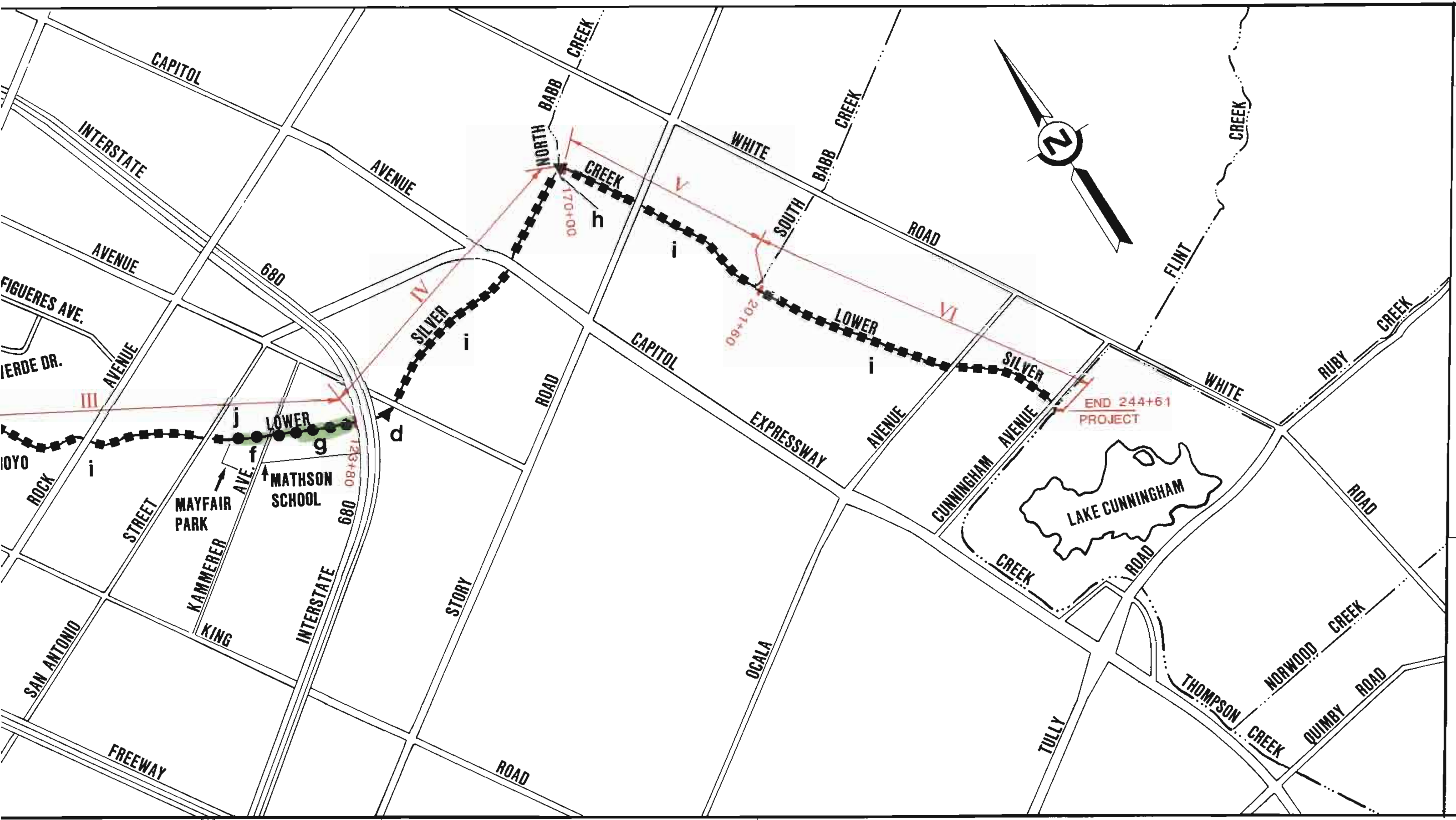

LEGEND

CHANNEL WORK:

- EARTH ●●●
- TRAPEZOIDAL CONCRETE ■■■
- RECTANGULAR CONCRETE ▼▼▼

FLOODPROOFED BUILDINGS ☒

BIOLOGICAL AND/OR LANDSCAPE MITIGATION 🟩

REACHES: VI

STATIONING: 0+50

TYPICAL SECTION: a.

STREAM: —···—···—

WORKS OF IMPROVEMENT

LOWER SILVER CREEK WATERSHED PROJECT

SANTA CLARA COUNTY, CALIF.
NOVEMBER 1982

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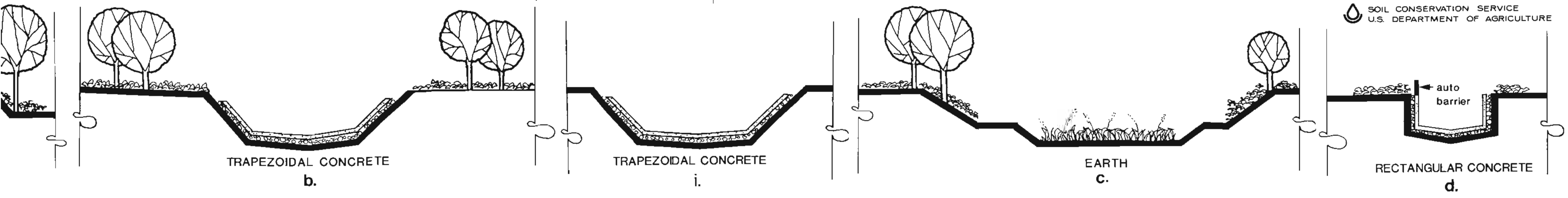
SCALE

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

FIGURE 7.



Mitigation Features

The following features and techniques will be included as part of the project to minimize or eliminate any adverse environmental impacts.

1. Ground cover, trees, and shrubs will be established along certain sections of Lower Silver Creek to mitigate impacts upon wildlife habitat. The plants selected will emphasize native species associated with riparian ecosystems. This vegetation will also enhance the visual quality for surrounding residents. Biological mitigation plantings will be established at the following locations: (1) between Coyote Creek and the Western Pacific Railroad, (2) upstream of Bayshore Freeway to King Road (station 40+50), (3) adjacent to Plata Arroyo Park, (4) adjacent to Mayfair Park, and (5) adjacent to the Mathson School property. All mitigation plantings will be installed after construction of each channel reach.

   The plantings along Mathson School will be both within project rights-of-way and on school property. SCVWD will obtain a term easement to permit SCS to plant and establish the plantings on school property. The easement will also contain provisions that allow SCVWD to maintain the plantings on school property. The mitigation plantings will be designed in such a manner that the school, at its own expense, can incorporate an outdoor environmental classroom into the area at a later date. This will provide an opportunity to study ecological processes and values immediately adjacent to an urban school yard.

   All plantings will be irrigated during establishment. The establishment period will be for two years. Irrigation will be continued after establishment until plants are able to survive without supplemental irrigation.

2. Landscaping will be provided along Lower Silver Creek adjacent to King Road, between Interstate 680 and Jackson Avenue, and at selected highly visible road crossings. Species beneficial to wildlife will be used in the plantings to help mitigate adverse impacts upon wildlife habitat.

3. New fences will be installed to supplement existing fences along concrete channel sections to protect human life. An automobile barrier will be installed along the channel where it parallels King Road.

4. During installation, state and local air and water pollution regulations will be adhered to. The plans and specifications for construction activities will include a section that will specify steps to control erosion and minimize the production of sediment and other pollutants to the water and air during construction operations. These steps may include but are not limited to the following measures:

   --seeding to protect disturbed areas from erosion

   --mulching to protect soil surfaces from erosion

   --sediment basins to settle and filter out sediment to protect streams below the construction site during construction

   --straw bale filters to trap sediment from areas of limited runoff

   --excavation of earth channels during dry seasons of the year

   --adherence to regulations concerning the burning of brush or slash or disposal of other materials

   --keep all public access or haul roads sprinkled as required to fully suppress dust; and

   --limiting operations, when possible, on very dry, windy days.

5. During installation, state and local health and safety regulations will be adhered to.

Permits and Compliance

A dredge and fill (404) permit may be required from the U.S. Army Corps of Engineers. A streambank alteration permit will be required from the California Department of Fish and Game. Other state and local permits may be required. Other Federal statues with which the recommended plan should comply are listed in Table L.

TABLE L
COMPLIANCE OF THE RECOMMENDED PLAN WITH WRC-DESIGNATED
ENVIRONMENTAL STATUTES

FEDERAL POLICY	COMPLIANCE
Archaelogical and Historic Preservation Act, 16 U. S. C. 469 et seq.	Full Compliance
Clean Air Act, as amended, 42 U. S. C. 1857h-7 et seq.	Full Compliance
Clean Water Act, (Federal Water Pollution Control Act), 33 U. S. C. 1251 et seq.	Full Compliance
Coastal Zone Management Act, 16 U. S. C. 1451 et seq.	Not Applicable
Endangered Species Act, 16 U. S. C. 1531 et seq.	Full Compliance
Estuary Protection Act, 16 U. S. C. 1221 et seq.	Not Applicable
Federal Water Project Recreation Act, 16 U. S. C. 460-1(12) et seq.	Not Applicable
Fish and Wildlife Coordination Act, 16 U. S. C. 661 et seq.	Full Compliance
Land and Water Conservation Fund Act, 16 U. S. C. 460/460/-11, et seq.	Full Compliance
Marine Protection, Research and Sanctuary Act, 33 U. S. C. 1401 et seq.	Not Applicable
National Environmental Policy Act, 42 U. S. C. 4321 et seq.	Full Compliance
National Historic Preservation Act, 16 U. S. C. 470a et seq.	Full Compliance
Rivers and Harbors Act, 33 U. S. C. 403 et seq.	Full Compliance
Watershed Protection and Flood Prevention Act, 16 U. S. C. 1001 et seq.	Full Compliance
Wild and Scenic Rivers Act, 16 U. S. C. 1271 et seq.	Not Applicable

Costs

The total project installation cost is $13,954,000. The Public Law 566 share will be $12,223,000 and other funds will be $1,731,000.

Structural Measures: Installation cost for 4.64 miles of channel work and associated vegetative work is estimated at $13,944,000. The Public Law 566 share will be $12,215,000 and the local share will be $1,729,000. These costs include construction, engineering, land rights, and project administration.

Construction costs are based on quantity estimates for the proposed structures and recent unit prices for similar work done under comparable conditions. Public Law 566 funds will bear 100 percent of the construction costs, estimated at $10,397,000. Mitigation costs are included in these costs.

Engineerings costs include the direct cost of engineering, surveys, investigations, designs, and preparation of plans and specifications of structural measures. Public Law 566 funds will bear 100 percent of the engineering costs, estimated at $623,000.

Land rights costs include the cost of acquiring 5.6 acres of rights-of-way and easements for installing the structural measures, the cost of related surveys and legal services, and the cost of road crossings, fencing, and utility modifications. Local funds will bear 100 percent of land rights costs, estimated at $1,638,000.

Project administration costs include the cost of construction, inspection, and other expenses for contract administration and general supervision of project installation. The Public Law 566 share will be $1,195,000 and the local share will be $91,000.

Nonstructural Measures: Total installation cost for nonstructural measures is $10,000. Cost-sharing for nonstructural measures is 80 percent PL-566 funds and 20 percent local funds. The Public Law 566 share is $6,000 for construction, $1,000 for engineering, and $1,000 for project administration. The local share is $1,000 for land rights and $1,000 for project administration.

Installation and Financing

The installation period for the planned project is four years. Installation of the project measures will be by channel reaches, beginning at the confluence with Coyote Creek and proceeding upstream to Lake Cunningham (Figure 7). Following is the proposed order of installation.

TABLE M
INSTALLATION SCHEDULE

Year	Preparation of Plans and Specifications	Expenditures For Land Rights	Construction
1	Nonstructural Reach 1 and 2	Reach 1[1]	
2	Reach 3 and 4	Nonstructural Reach 3[1] Reach 1 and 2[2]	Nonstructural Reach 1 and 2
3	Reach 5 and 6	Reach 3 and 4	Reach 3 and 4
4		Reach 5 and 6	Reach 5 and 6

[1] Acquire right-of-way.
[2] All other land rights expenditures.

The total estimated installation costs allocated for the project during the 4-year installation period are shown below.

TABLE N
INSTALLATION COSTS

Year	Measures	PL-566 Funds ($)	Other Funds ($)	Total ($)
1	Nonstructural	1,000	0	1,000
	Structural	176,000	0	176,000
	Land Rights	0	386,000	386,000
2	Nonstructural	7,000	2,000	9,000
	Structural	3,530,000	0	3,530,000
	Land Rights	0	431,000	431,000
3	Structural	4,847,000	0	4,847,000
	Land Rights	0	882,000	882,000
4	Structural	3,662,000	0	3,662,000
	Land Rights	0	30,000	30,000
TOTAL		12,223,000	1,731,000	13,954,000

Specific responsibilities of SCVWD and SCS for project installation are the following:

The SCVWD will be responsible for:

1. acquiring the necessary permits, licenses, and other entitlements to install the project;
2. acquiring all landrights;
3. administration of all landrights contracts;
4. designing, installing, or modifying all road crossings and relocating utilities as necessary;
5. inspection of road crossing construction;
6. the costs as described earlier and summarized in Tables 1 and 2 at the end of this section;
7. operation and maintenance on the channel, mitigation plantings, and the nonstructural measures;
8. irrigation of plantings after two-year establishment period until plants are able to survive without supplemental irrigation.

The Soil Conservation Service will be responsible for:

1. The costs as described earlier and summarized in Tables 1 and 2 at the end of this section;
2. the administration of all construction contracts;
3. inspecting construction of the structural and nonstructural measures;
4. irrigation and maintenance of all plantings during the two-year establishment period.

SCVWD will be the sponsor responsible for dealing with SCS during project installation. SCVWD has formally requested that SCS do all the contracting (except for land rights) for this project.

An additional 5.6 acres of right-of-way will be required along channel reaches 1 and 3. No relocations are anticipated. SCVWD will be responsible for obtaining this right-of-way and will follow the procedures outlined in the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (PL-91-646). SCVWD will use their power of eminent domain if necessary.

Investigations have revealed no significant historical or archaelogical resources in the project rights-of-way. However, construction contracts will make provisions for actions to be taken should cultural resources be discovered during construction (9). Such action will follow the procedures of PL-93-291. There will be no change in federal responsibilities under Executive Order 11593.

SCVWD will pay the local share of costs through the use of their share of property taxes and benefit assessment that were approved by the voters in June 1982. Under existing state law, SCVWD will request funds from the State of California for reimbursement of part of the land rights cost.

SCVWD has reviewed the local costs associated with the proposed project and will have sufficient revenue available to finance them.

Federal assistance for carrying out the project will be provided under the authority of the Watershed Protection and Flood Prevention Act, PL-566.

The sponsors are aware that this assistance is conditioned on the fulfillment of the local obligations presented in this plan, and is contingent on Congressional appropriation of the required Federal funds.

Operation, Maintenance, and Replacement

Th SCVWD will be responsible for the maintenance of all projects measures. Prior to signing a project agreement, an Operation and Maintenance (O&M) Agreement will be entered into by the SCVWD and the SCS. This agreement will cover all features of the project. The O&M agrement will include a reference to the SCS National Operation and Maintenance Manual. O&M plans will be prepared for the various items of work and appended to the agreement. Annual O&M costs are estimated at 65,100 for all measures.

All completed works of improvement will be inspected annually to determine the maintenance required. Inspections will also be conducted after any unusual event or conditon that might adversely affect a structural measure. The inspection group will consist of representatives of SCVWD, ERCD, and SCS, and may include representatives of other interested agencies.

Nonstructural Measures: Nonstructural measures will be inspected annually. Waterproof sealant will be inspected as well as the availability and condition of the floodshields. SCVWD will enter into an agreement with the private property owners transfering O&M reponsibilities to the owners.

Structural Measures: The following describes the essential elements of the O&M responsibilities of SCVWD. These responsibilites will include financing of the actions.

--Channel: After installation, obstructions to channel flow are to be removed. The channel is to remain clear of sediment, trash, and debris; vegetation in the channel is to be controlled; causes of scour are to be corrected; and scour areas are to be repaired. The drop structure is to be kept clear of debris.

--Streambank Protection: Slopes are to be maintained, displaced materials will be replaced to alignment and grade, and any local isolated erosion areas are to be repaired so that they are not damaging to the project.

--Earth Levees: Slopes are to be maintained as designed. Only shallow rooted plants are to be allowed on levees whose base is below the design water surface. Trees may be planted on levees whose base is above the design water surface. Rodent burrows will be filled.

--Structural Elements: Maintenance is to be performed to assure that footings and cutoffs are not exposed, hydraulic function is maintained, weep holes are open, and surfaces are aligned and show no stress.

Biological and Landscape Mitigation Plantings: SCVWD will be responsible for maintenance of the plantings during the life of the project. Damaged plants will be replaced by SCVWD to insure the designed density and vitality of the plantings. Use of pesticides in these areas will be restricted since they are generally incompatible with wildlife. However, limited use of pesticides will be allowed to control plant disease, insect infestation, or weeds that threaten mitigation plantings or pose a fire hazard.

The establishment period for the plantings will be two years. Irrigation and maintenance will be the responsibility of SCS during this establishment period.

SCVWD will continue to irrigate the plants after the initial two-year establishment period as needed from April through October until the plants are able to survive and grow without irrigation. Weedy plants will be allowed to grow in the biological mitigation sites once the trees and shrubs can withstand the competition as long as they do not detract visually from the landscape or pose a fire hazard.

TABLE 1. ESTIMATED INSTALLATION COST
Lower Silver Creek Watershed, California

			ESTIMATED COST (Dollars)[1]		
Installation Cost Item	Unit	Number	PL-566 Funds SCS[2]	Other Funds SCS[2]	Total
NONSTRUCTURAL MEASURES					
Floodproofing	Structures	2	8,000	2,000	10,000
SUBTOTAL NONSTRUCTURAL			8,000	2,000	10,000
STRUCTURAL MEASURES					
Channel Work:	Miles	4.64	12,215,000	1,729,000	13,944,000
SUBTOTAL STRUCTURAL			12,215,000	1,729,000	13,944,000
TOTAL PROJECT			12,223,000	1,731,000	13,954,000

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[1] Price Base 1982

[2] Federal agency responsible for assisting in installation of works of improvement.

TABLE 2. ESTIMATED COST DISTRIBUTION
STRUCTURAL AND NONSTRUCTURAL MEASURES
Lower Silver Creek Watershed, California
(Dollars)[1]

Item	INSTALLATION COST--PL-566 FUNDS				INSTALLATION COST--OTHER FUNDS					
	Construction	Engineering	Project Administration	Total PL-566	Construction	Engineering	Land Rights	Project Administration	Total Other	Total Installation Cost
STRUCTURAL MEASURES (M)										
Channel Work										
0+50 to 40+50	1,654,000	99,000	190,000	1,913,000			398,000[3]	2,000	400,000	2,343,000
40+50 to 53+25	1,288,000	77,000	148,000	1,513,000			4,000[4]	1,000	5,000	1,518,000
53+25 to 123+78	2,019,000	121,000	232,000	2,372,000			573,000[5]	18,000	591,000	2,963,000
123+78 to 170+00	2,152,000	129,000	247,000	2,528,000			635,000[6]	68,000	703,000	3,231,000
170+00 to 201+60	1,527,000	92,000	176,000	1,795,000			12,000[7]	1,000	13,000	1,808,000
201+60 to 244+61	1,757,000	105,000	202,000	2,064,000			16,000[8]	1,000	17,000	2,081,000
SUBTOTAL STRUCTURES	10,397,000[2]	623,000	1,195,000	12,215,000			1,638,000	91,000	1,729,000	13,944,000
NONSTRUCTURAL MEASURES										
Floodproofing	6,000	1,000	1,000	8,000			1,000	1,000	2,000	10,000
SUBTOTAL NONSTRUCTURAL	6,000	1,000	1,000	8,000			1,000	1,000	2,000	10,000
GRAND TOTAL	10,403,000	624,000	1,196,000	12,223,000			1,639,000[9]	92,000	1,731,000	13,954,000

November 1982

[1] Price Base 1982
[2] Includes $165,000 for biological and landscape mitigation plantings
[3] Includes $15,000 utility relocation
[4] Utility relocation
[5] Includes $30,000 utility relocation, $10,000 for foot bridge, $32,000 sports track relocation, $4,000 for parking lot relocation, $84,000 for Alum Rock Avenue culvert addition
[6] Includes $17,000 utility relocation, $195,000 for Jackson Avenue culvert, and $423,000 for Capitol Expressway culvert addition
[7] Utility relocation
[8] Utility relocation
[9] cost of land and associated costs for surveys and legal fees

TABLE 2A. COST ALLOCATION AND COST SHARING SUMMARY
STRUCTURAL AND NONSTRUCTURAL MEASURES
Lower Silver Creek Watershed, California
(Dollars)[1]

Item	COST ALLOCATION Purpose Flood Prevention	COST SHARING PL-566	COST SHARING Other	COST SHARING Total
STRUCTURAL MEASURES				
Construction	10,397,000	10,397,000		10,397,000
Engineering	623,000	623,000		623,000
Land Rights	1,638,000		1,638,000	1,638,000
Project Administration	1,286,000	1,195,000	91,000	1,286,000
SUBTOTAL	13,944,000	12,215,000	1,729,000	13,944,000
NONSTRUCTURAL MEASURES				
Floodproofing				
Construction	6,000	6,000		6,000
Engineering	1,000	1,000		1,000
Land Rights	1,000		1,000	1,000
Project Administration	2,000	1,000	1,000	2,000
SUBTOTAL	10,000	8,000	2,000	10,000
GRAND TOTAL	13,954,000	12,223,000	1,731,000	13,954,000

[1] Price Base 1982

November 1982

TABLE 3B. STRUCTURAL DATA
CHANNEL WORK
Lower Silver Creek Watershed, California

Channel Reach	Station	Drainage Area sq. mi.	100-Year Frequency Design Discharge cfs.	Water Surface Elevation ft./msl	Hydraulic Gradient ft./ft.	CHANNEL DIMENSIONS				"n" Value		Velocities ft./sec.		Excavation Volume cu. yds.	Type of Work[3]	Existing Channel Type[4]	Present Flow Condition[5]
						Bottom Gradient ft./ft.	Bottom Width ft.	Bottom Elevation ft./msl	Side Slope	Aged[1]	As Built[2]	Aged[1]	As Built[2]				
1	0+50	43.4	6,100	80.10				61.0									
	2+36	43.4	6,100	80.17	.000251	.0006	50	61.16	2:1	.045	.024	2.87	5.49	38,400	II	M(1956)	I
	3+27[8]	43.4	6,100	79.98	.000899	.0006	50	66:26	2:1	.045	.024	4.50	11.44	[6]	II	M(1956)	I
	9+00	43.4	6,100	80.5	.000855	.0006	50	66.60	2:1	.045	.024	4.42	7.35	[6]	II	M(1956)	I
	14+00	43.4	6,100	80.75	.000489	.0028	25	67.90	1½:1	.015	.015	9.28	9.28	[6]	IIL	M(1956)	I
	20+45	43.4	6,100	81.65	.000933	.0028	35	69.70	1½:1	.015	.015	9.06	9.06	22,800	IIL	M(1956)	I
	27+00	43.4	6,100	83.18	.000147	.001	35	70.21	1½:1	.015	.015	5.31	5.31	[6]	IIL	M(1956)	I
	39+00	43.4	6,100	83.90	.000542	.0006	60	70.91	2:1	.035	.024	4.40	3.14	45,000	II	M(1956)	I
2	40+50	43.4	6,100	83.01	.000802	.0022	48	71.27	0	.015	.015	11.06	11.06	3,900	IIL	M(1956)	I
3	53+25	36.1	5,200	84.08	.002374	.0022	42	74.00	0	.015	.015	12.39	12.39	20,000	IIL	M(1956)	I
	64+00	36.1	5,200	86.96	.000317	.002	50	76.19	2:1[7]	.035	.024	7.01	7.53	11,300	II	M(1958)	I
	79+75	36.1	5,200	88.70	.001617	.0017	25	78.87	1½:1	.015	.015	13.56	13.56	7,200	IIL	M(1958)	I
	88+07[9]	36.1	5,200	92.14	.002096	.015	20	80.09	1:1	.015	.015	13.08	13.08	0	IIL	M(1958)	I
	100+20[9]	36.1	5,200	95.01	.001583	.015	20	83.48	.77:1	.015	.015	14.30	14.30	0	IIL	M(1958)	I
	104+40	36.1	5,200	97.27	.000630	.0035	25	84.93	1½:1	.015	.015	9.72	9.72	12,100	IIL	M(1958)	I
	108+75	36.1	5,200	97.20	.001012	.0031	25	86.28	1½:1	.015	.015	11.56	11.56	[6]	IIL	M(1958)	I
	112+77	36.1	5,200	99.48	.000485	.002	50	87.08	2:1[7]	.035	.024	4.03	3.83	55,600	II	M(1977)	I
4	123+80	36.1	5,200	98.4	.002495	.002	50	90.85	2:1	.035	.024	4.73	4.99	[6]	II	M(1977)	I
	130+56	33.7	5,000	102.01	.001387	.001	40	91.93	0	.015	.015	12.98	12.98	7,100	IIL	M(1977)	I
	157+95	33.7	5,000	110.7	.002041	.0032	20	99.22	1½:1	.015	.015	11.46	11.46	31,000	IIL	M(1977)	I
	169+00	33.7	5,000	110.5	.006181	.0034	35	104.65	1:1	.015	.015	21.33	21.33	16,700	IIL	M(1977)	I
5	170+00	33.7	5,000	111.13	.004594	.0034	40	105.0	0	.015	.015	18.80	18.80	2,300	IIL	M(1977)	I
	172+00	31.2	4,600	112.55	.003276	.0036	24	105.7	0	.015	.015	16.78	16.78	25,300	IIL	M(1977)	I
	180+01	31.2	4,600	115.21	.004139	.0036	24	108.61	1½:1	.015	.015	18.37	18.37	[6]	IIL	M(1977)	I
6	201+60	31.2	4,600	121.82	.000961	.0008	24	111.25	1½:1	.015	.015	10.96	10.96	[6]	IIL	M(1977)	I
	218+00	26.3	3,600	123.00	.000741	.0009	24	113.05	1½:1	.015	.015	9.54	9.54	21,700	IIL	M(1977)	I
	232+00	26.3	3,600	124.10	.000819	.0007	24	114.08	1½:1	.015	.015	9.72	9.72	[6]	IIL	M(1977)	I
	244+61	26.3	3,600	125.01	.000753	.0007	24	114.82	1½:1	.015	.015	9.49	9.49	[6]	IIL	M(1977)	I

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[1] Velocities associated with design discharge
[2] Velocities associated with 10-year frequency discharge
[3] II = Enlargement or realignment of existing channel or stream; IIL = Concrete lined
[4] M = Man-made ditch or previously modified channel (date modified)
[5] I = Intermittent-continuous flow through some seasons of the year but little or no flow through other seasons
[6] Included in previous entry
[7] Left side sloped 2:1; right side sloped 2:1 to blend to landscape grading
[8] Grouted rock drop structure
[9] Existing concrete lined channel; add floodwall for freeboard

TABLE 4. ANNUALIZED ADVERSE NED EFFECTS
Lower Silver Creek Watershed, California
(Dollars)[1]

Evaluation Unit	PROJECT OUTLAYS		OTHER PROJECT COST	
	Amortization of Installation Cost	Operation, Maintenance, and Replacement Cost	Interest During Installation	Total
NONSTRUCTURAL				
Floodproofing	800	300	100	1,200
STRUCTURAL				
Channel Work	1,098,600	64,800	98,000	1,261,400
GRAND TOTAL	1,099,400	65,100	98,100	1,262,600

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[1] Price Base 1982; discounted and annualized at $7^7/_8$ interest rate for 100 years

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TABLE 5. ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS
Lower Silver Creek Watershed, California
(Dollars)[1]

Item	ESTIMATED AVERAGE ANNUAL DAMAGE Without Project	ESTIMATED AVERAGE ANNUAL DAMAGE With Project	Damage Reduction Benefit
Floodwater			
Nonagricultural			
Buildings and Improvements	1,461,400	144,400	1,317,000
Vehicles	273,700	42,000	231,700
Transportation Disruption	19,700	6,600	13,100
Emergency Services	14,000	2,400	11,600
SUBTOTAL	1,768,800	195,400	1,573,400
Sediment			
Overbank Deposition	13,900	0	13,900
SUBTOTAL	13,900	0	13,900
TOTAL	1,782,700	195,400	1,587,300

[1] Price Base 1982

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TABLE 6. COMPARISON OF NED BENEFITS AND COSTS
Lower Silver Creek Watershed, California
(Dollars)[1]

Evaluation Unit	Flood Prevention			Average Annual Cost[2]	Benefit Cost Ratio[3]
	Damage Reduction	Savings in Future Costs	Total		
STRUCTURAL					
Channel Work	1,584,100	29,000	1,613,100	1,261,400	1.3
NONSTRUCTURAL					
Floodproofing	3,200	0	3,200	1,200	2.7
GRAND TOTAL	1,587,300	29,000	1,616,300	1,262,600	1.3

[1] Price Base 1982; includes interest during installation

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[2] From Table 4

[3] The benefit cost ratio for present conditions (excluding projections): 1.2:1.0

EFFECTS of RECOMMENDED PLAN

EFFECTS OF RECOMMENDED PLAN

Floodwater and Sediment

The number of buildings damaged by a 100-year flood will be reduced from 1,412 to 140. Project installation will provide protection to 1,272 buildings (1,194 residences, 61 commercial establishments, 12 industrial buildings, 1 church, and 4 school buildings). The number of vehicles damaged by a 100-year flood will be reduced from 3,400 to 400. All major roadways except the underpasses at Bayshore Freeway/McKee Road and Interstate 680/McKee Road will remain open. This will reduce the number of motorists that would have to be rerouted due to a 100-year flood from 294,000 to 145,000. Sediment deposition on the floodplain for the 100-year flood will be reduced from 20,080 tons to 140 tons. Deposition on roadways will be virtually eliminated except in and around Bayshore Freeway. The number of people requiring food, shelter, and other emergency services during a 100-year flood will be reduced from 2,900 to 350.

The project will reduce average annual flood damages from $1,782,700 to $195,400 (Table O). In addition to this $1,587,300 in floodwater reduction benefits, the project will also produce $29,000 in average annual benefits in the form of savings in future Federal Emergency Management Agency (FEMA) administrative costs. The project will produce a benefit to cost ratio of 1.3 to 1.0.

TABLE O
AVERAGE ANNUAL DAMAGE REDUCTION BENEFITS AND RESIDUAL DAMAGES

Damage Category	Future Without Project Damages	Residual Damages With Project	Project Benefits
Buildings	$1,461,400	$144,400	$1,317,000
Vehicles	273,700	42,000	231,700
Transportation Disruption	19,700	6,600	13,100
Sediment	13,900	0	13,900
Emergency Services	14,000	2,400	11,600
TOTAL	$1,782,700	$195,400	$1,587,300

Flooding will continue to occur from a 100-year flood after project installation in three areas (Figure B-1, Appendix B). One area is at the confluence of South Babb Creek and Lower Silver Creek. This is a result of overflow from South Babb Creek. Another area north of Lower Silver Creek will continue to flood as a result of overflow from Miguelita Creek. The large area south of Lower Silver Creek will continue to flood as a result of overflow from Coyote Creek upstream of its confluence with Lower Silver Creek. A total of 140 buildings in the latter two areas will continue to flood at the 100-year event.

Analysis of the data displayed in Tables A and P show that damages to buildings at the 5, 10, 25, 100, and 500-year flood events will be reduced by 93, 97, 98, 93, and 47 percent, respectively.

TABLE P
RESIDUAL DAMAGES BY FLOOD FREQUENCY

TYPE OF BUILDING	5-YEAR	10-YEAR	25-YEAR	100-YEAR	500-YEAR
Residential					
Total Damages ($)[1]	23,300	148,000	176,600	1,196,800	22,092,700
Number Flooded[2]	0	23	26	111	1,285
Commercial					
Total Damages ($)	0	0	0	297,800	2,408,600
Number Flooded	0	0	0	12	69
Industrial					
Total Damages ($)	0	0	0	241,100	1,765,000
Number Flooded	0	0	0	5	13
Churches					
Total Damages ($)	0	0	0	11,300	15,400
Number Flooded	0	0	0	1	1
Schools					
Total Damages ($)	0	0	0	161,700	362,600
Number Flooded	0	0	0	11	15
TOTAL DAMAGES ($)	23,300	148,000	176,600	1,908,700	26,644,300
TOTAL FLOODED (#)	0	23	26	140	1,383

[1] Includes damages to yards and outside improvements.
[2] Number of buildings suffering damages from interior flooding.

Social

During a 100-year flood, approximately 621 of the 1,305 residences that flood would be subject to inside water depths of over 1 foot and outside depths averaging 3 to 4 feet. This life threatening situation will be eliminated in 608 of these homes. Residents of the Hidden Brooks Retirement Center and children attending Anne Darling School will also be protected from the life threatening hazards of flooding although very shallow flooding will remain. The lives, health, and safety of all floodplain residents will not be threatened by disruptions to emergency services (police, fire, and medical) due to road closures.

Many low income families, who cannot afford the cost of repairing flood damages to their homes or replacing personal belongings, will not face the financial hardships associated with flooding.

The economy of the community will benefit from increased employment and purchases of construction materials during project installation. The economy will also benefit from savings in lost wages, the value of goods and services protected from flooding, and increased property values.

Biological

Installation of the project will remove 4.6 acres (3.3 habitat units) of riparian vegetation. Enlargement of existing channels will result in an overall increase of wetlands of lower habitat value. This increase in wetland acreage is a result of the increased widths of earthen sections of channel and the increased bottom widths when converting the existing earthen sections to concrete-lined channel. Although wetland acreage will increase by 8.9 acres, there will be an overall loss of 1.0 habitat unit. This is because about 6.1 acres of the 8.9 acres will be within the concrete sections of channel with very little habitat value. The concrete channel sections will have some habitat value because sediment will deposit in the channel bottom allowing various aquatic plants to become established. The enlargement of 0.87 miles of earthen channel will improve the habitat value of the existing wetlands in these sections.

The loss of wetland and riparian habitat units will be mitigated by planting 6.1 acres of trees and shrubs along the channel. An additional 0.5 acres of landscape plantings will also incorporate species that are beneficial to wildlife.

Visual

Project installation will, in most places, change the appearance of the channel. The earthen sections of channel will be stabilized and permanent vegetation established to prevent streambank erosion. The appearance of streamside areas at Mathson School, Mayfair Park, Plata Arroyo Park, and between the Western Pacific Railroad and Coyote Creek will be improved by the biological mitigation plantings.

Adverse impacts will occur in some of those areas where the channel is concrete-lined. Landscape mitigation plantings of 0.5 acres will be installed along the highly visible concrete sections on King Road and between Interstate 680 and Jackson Road. Another highly visible concrete section between Mayfair Park and San Antonio Street will be architecturally treated. Plantings will be established at selected road crossings that will eventually provide some visual screening of the concrete channel.

Downstream Areas

According to flood control studies, Coyote Creek currently floods downstream of its confluence with Lower Silver Creek between State Highway 17 and south San Francisco Bay. There is significant sediment deposition associated with this flooding.

Project installation will not increase flooding in this area. However, sediment deposition on the floodplain will be increased by about 100 tons (about 10 truckloads) or 1.3 percent on an average annual basis.

About 510,000 tons of sediment are deposited in south San Francisco Bay annually from various tributaries (11). With project installation, sediment deposition will be increased by about 200 tons or 0.2 percent on an average annual basis. No significant impacts to the Bay or wildlife refuge are expected from this sediment deposition. Project installation also will not increase freshwater inflow into the refuge.

Growth Inducement

Once the proposed flood control project is completed, the threat of flooding to 1,272 structures from a 100-year flood will be eliminated. By the time the project is installed, the few remaining acres of unoccupied land in the floodplain will be developed. Therefore, the project will not induce further growth in the floodplain.

Installation of this plan will remove a constraint to development of upstream areas in the Flint, Ruby, Quimby, Fowler, and Evergreen Creek drainage areas. Undeveloped land in these areas are within the urban service area boundary of the city of San Jose and are planned for development.

Development in these areas is controlled by the Evergreen Development Policy of the general plan for the city (10). Further development in these areas after project installation is contingent on developers enlarging the tributary stream of an area to a 100-year flood capacity. Further development is also dependent on the provision of urban services (transportation, schools, parks, water, police service, and fire service).

Significant Unavoidable Environmental Impacts

The following adverse impacts are those that cannot be substantially mitigated.

--The project will remove 4.6 acres of scattered riparian vegetation with commensurate impacts on wildlife and aesthetic values until the riparian mitigation plantings mature.

--In some areas modifications to the channel may result in adverse visual impacts, particularly to adjacent residences.

--Dust generation, noise, and traffic obstructions will adversely impact nearby residents during construction.

--The project will require 5.6 acres of additional land.

--Temporary wind and water erosion may occur during construction until vegetative ground cover becomes established.

Irreversible and Irretrievable Commitment of Resources

The primary irreversible change will occur in those areas where the existing earth channel will be converted to concrete-lined channel. This will result in a permanent loss of riparian vegetation in these areas. The aesthetic quality of these areas will also be diminished.

The project will require a commitment of an additional 5.6 acres to rights-of-way. This land is currently in private ownership.

Construction, operation, and maintenance of the flood control facilities will require irretrievable commitments of energy, material, and finances.

Short-Term Versus Long-Term Use of Resources

The proposed project is compatible with the projected future long-term uses of the area's land, water, and other natural resources. The project also conforms to the established goals of SCVWD and the city of San Jose to provide the surrounding community with protection from serious flooding.

A major impact of the project will be the loss of riparian habitat, some of it permanently, and the unsightly appearance of the channel during construction. However, the mitigation plantings and natural plant succession in the earthen sections of channel will ultimately replace and possibly enhance lost habitat and visual quality.

Another major short-term impact of the project will be the disruptions and inconveniences to nearby residents during construction activities.

Relationship to Other Plans, Policies, and Controls

This plan conforms to the General Land Use Plan of Santa Clara County, as updated. The channel modifications contained in the plan were sized to accommodate the land use changes indicated in the General Plan, all of which occur outside the current floodplain but which drain into the floodplain. SCVWD already owns all of the required rights-of-way necessary to implement this plan, except for 5.6 acres. These rights-of-way were purchased earlier, when prior channel modifications were made, or in anticipation of future corrective actions.

The plan also conforms to the SCVWD 10-year flood control plan and priority system, as updated. SCVWD proposed a flood control project in this watershed in the early 1970s and in 1978 an Environmental Impact Report (EIR) calling for channel modifications to Lower Silver Creek was approved. This plan provides the same level of protection as referred to in the EIR and also contains similar corrective measures.

SCVWD, the agency in charge of flood control in the county, has a policy of providing a 100-year level of protection on flood control projects in urban areas where drainage areas exceed 1/2 square mile. This plan provides this level of protection.

This plan complies with various federal environmental statutes (Table Q).

TABLE Q
EFFECTS OF THE RECOMMENDED PLAN ON RESOURCES OF PRINCIPAL NATIONAL RECOGNITION

TYPES OF RESOURCES	PRINCIPAL SOURCES OF NATIONAL RECOGNITION	MEASUREMENT OF EFFECTS
Air Quality	Clean Air Act, as amended (42 U.S.C. 1857h-7 et seq.)	No effect.[1]
Areas of particular concern within the coastal zone	Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 et seq.)	Not present in planning area.
Endangered and threatened species critical habitat	Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)	Not present in planning area.
Fish and Wildlife Habitat	Fish and Wildlife Coordination Act (16 U.S.C. Sec. 661 et seq.)	3.3 habitat units of riparian habitat lost; 4.3 habitat units gained by establishing 6.6 acres of mitigation plantings (see wetlands below).
Floodplain	Executive Order 11988, Floodplain Management	1,100 acres of 100-year floodplain eliminated. This floodplain is already 95 percent urbanized. No induced flooding.
Historic and Cultural properties	National Historic Preservation Act of 1966, as amended (16 U.S.C. Sec. 470 et seq.)	Not present in planning area.
Prime and Unique Farmland	CEQ Memorandum of August 1, 1980: Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act.	No effect.
Water Quality	Clean Water Act of 1977 (33 U.S.C. 1251 et seq.)	No effect.
Wetlands	Executive Order 11990, Protection of Wetlands Clean Water Act of 1977 (42 U.S.C. 1857h-7, et seq.)	1.0 habitat unit of wetland lost; mitigated in conjunction with riparian habitat.
Wild and Scenic Rivers	Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271 et seq.)	Not present in planning area.

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[1] Possibility of short-term adverse impacts during construction period.

CONSULTATION and PUBLIC PARTICIPATION

CONSULTATION AND PUBLIC PARTICIPATION

Pre-Application

Prior to applying for Public Law 566 assistance in February 1979 the SCVWD prepared a proposed solution to the flooding problems of Lower Silver Creek. A final EIR was issued in May 1978 to comply with the California Environmental Quality Act (CEQA). The planning process included coordination with other agencies, groups, and the public. From 1974 to 1978, eight community meetings, two community workshops, three public meetings, and a final approval hearing were held by SCVWD (12).

The eight community meetings were held during October and November 1974. Lower Silver Creek was divided into four zones and two meetings were held in each zone. About 4,000 invitations were sent out for these meetings. The meetings were sparsely attended with total attendance at all eight meetings being only 94 people. After reviewing the results of the eight community meetings it was recommended that an opinion poll be conducted with the floodplain residents.

In December 1974, a telephone survey of 650 people was conducted regarding the proposed project. This was followed by a public opinion questionnaire mailed by SCVWD to about 3,000 floodplain residents, of which 480 responded. Results of the community meetings, telephone survey, and questionnaire showed that the public favored a single-purpose flood prevention project with associated landscape provisions, and that it should not include built-in recreation facilities.

The development of the plan was discussed at two community workshops held in June 1975. Notices of the meeting were sent to 2,800 homeowners. Attendance at the two meetings totaled 36 people.

In September 1977, a public meeting was held to discuss the draft EIR prepared by SCVWD. About 40 people attended this meeting. In June 1978 a final approval hearing was held on the final EIR. After this hearing the Board of Directors of SCVWD approved the project.

Post-Application

Because of funding problems SCVWD applied for Public Law 566 assistance in February 1979 (13). SCS then held a public meeting in June 1979. This meeting was held to solicit views and suggestions of interested individuals, groups, and agencies so that the objectives and scope of planning studies could be defined.

In September, the California Department of Conservation approved the application and gave it a number one priority. A preauthorization report was then prepared by SCS to appraise the economic feasibility and environmental impacts of a flood control project on Lower Silver Creek. In September 1980 the Administrator of the Soil Conservation Service authorized planning assistance for the Lower Silver Creek watershed project.

A copy of the preauthorization report was mailed to federal, state, and local agencies, as well as to private organizations, in November 1980 for their review and comments. An attachment listing the degree to which further studies would be conducted and a Notice of Planning Authorization was also sent with the report.

A similar mailing was conducted by SCVWD to approximately 3,750 property owners and residents in the floodplain. However, rather than being sent a copy of the report, they were sent a postcard preaddressed to SCS requesting a copy be sent to them. SCS received 141 request cards, the large majority being from individuals with only five from businesses or organizations. The name and address of each respondent was recorded for inclusion in future mailings. A public meeting was held in November 1980 to discuss the preauthorization report, results of studies conducted, and to scope future studies. Other higher priority projects preempted intensive work on this project until late 1981.

During February and March 1982, approximately 25 community leaders representing a wide range of groups were interviewed by SCS to obtain their views on the proposed project. A list of concerns about the project was derived from these interviews. These concerns were all addressed in the planning process.

In April 1982, SCS sent a project update to approximately 5,000 floodplain property owners and residents. Both Spanish and English versions were sent because 50 percent of the floodplain population are Hispanic. A preaddressed postcard to SCS requesting that their name remain on the mailing list for future mailouts was also enclosed. Individuals returned 551 of these request cards to SCS. The current mailing list of floodplain residents and property owners was established from these request cards and the 141 cards returned in 1980 requesting a copy of the preauthorization report.

In June 1982, the same project update was mailed to 44 federal and state agencies. A preaddressed postcard was also enclosed requesting a contact person to coordinate with in all future planning efforts. SCS received 30 replies to this request. In July a draft of the scoping of concerns section of the work plan and EIS/EIR was sent to the 44 agencies for their comments.

In July 1982, another project update was sent to all the agencies, organizations, and persons on the mailing list. This update concentrated on the problem and opportunity phase of the studies. Staff specialists in hydrology, sociology, economics, biology, geology, engineering, and landscape architecture presented brief summaries of their findings.

A 13 member steering committee held its first meeting in April 1982. This committee is made up of SCS, SCVWD, and ERCD representatives, as well as private citizens and two members of the San Jose city council. Meetings were held regularly with the committee from April 1982 through the present, involving five meetings to date. One of the committee's most important jobs was to reflect the concerns and needs of the local community.

A third project update was sent to all the agencies, organizations, and persons on the mailing list in September 1982. This update summarized the two alternatives SCS proposed to solve the flooding problems in the watershed. A public meeting announcement for the October 14, 1982 public meeting concerning the alternatives was also enclosed. A postcard was mailed to approximately 5,000 floodplain property owners and residents announcing the public meeting. Newspaper articles announcing the public meeting were also printed in the San Jose Mercury News, Eastside Sun, and El Observador.

Coordination With Other Plans and Agencies

California Department of Fish and Game: A representative of the California Department of Fish and Game participated in the biological habitat evaluation of Lower Silver Creek.

City of San Jose: The city of San Jose provided significant input into the traffic, sediment clean-up, and emergency services studies that were conducted to assess damages in these categories. Two city council members also served on the citizen's advisory committee.

East Flood Control Zone Advisory Committee: On August 19, 1982, a representative from SCS met with members of the East Flood Control Zone Advisory Committee (EFCZAC) to discuss the history and status of the Lower Silver Creek project. Information available on proposed alternatives was distributed to the members. The EFCZAC consists of interested citizens and appointed government representatives who oversee all flood control works in the East Flood Control Zone of the SCVWD.

Office of Historic Preservation: An archaeological and historical record search was conducted in May 1982 by the California Archaeology Inventory regional office at Sonoma State University for any recorded archaeological or historical sites in the project area. Results of this record search and archaeological surveys conducted for SCVWD along the entire length of Lower Silver Creek from Lake Cunningham to Coyote Creek were sent to the State Historic Preservation Officer (SHPO) for review.

U.S. Army Corps of Engineers: The Corps, which has conducted flood control studies on Coyote Creek, was contacted to obtain information on assessing impacts to downstream resources.

U.S. Fish and Wildlife Service: A request was made to the U.S. Fish and Wildlife Service in April 1980 for a list of threatened and endangered species that may occur in the watershed as required under Section 7 of the Endangered Species Act. After receiving the list, a biological assessment was conducted. Results of the assessment were sent to USFWS in October 1981 for review.

After reviewing the assessment USFWS concurred that no threatened or endangered species will be affected by the project. USFWS was also invited to participate in the biological habitat evaluation but was unable to do so.

Distribution List of Watershed Plan and EIS/EIR

The following agencies and groups were requested to comment on the draft plan and EIS/EIR. Approximately 160 copies were sent to these agencies and groups.

Federal

Agricultural Stabilization and Conservation Service
Department of Army - Corps of Engineers
Department of Commerce
Department of Health and Human Services
Department of Housing and Urban Development
Department of the Interior
Department of Transportation - Coast Guard
Environmental Protection Agency
Farmers Home Administration
Federal Emergency Management Agency
Federal Energy Regulatory Commission
Federal Highway Administration
Federal Power Commission
Forest Service
Office of Equal Opportunity - USDA

State

Office of Planning and Research, State Clearinghouse

Local Governments

Alum Rock Union School District
Association of Bay Area Governments
City of San Jose
San Jose Chamber of Commerce
San Jose Unified School District
Santa Clara County

Private Groups

Associated Sportsmen of California
Association for Environmental and Outdoor Recreation
California Cattlemen's Association
California Committee of Two Million
California Farm Bureau
California Federation of Fly Fishermen

Private Groups (Continued)

California Fly Fishermen Unlimited
California Forest Protective Association
California Historical Society
California Native Plant Society
California Natural Area Coordinating Council
California Natural Resource Federation
California Roadside Council
California State Grange
California Trout
California Wildlife Federation
Committee for Green Foothills
Friends of the Earth
Humane Society
Izaak Walton League
National Audubon Society
Natural Resources Defense Council
Operation Wildlife
People Can Act Together
Santa Clara County Farm Bureau
Santa Clara Valley Audubon Society
Sierra Club
The Nature Conservancy
United New Conservationists

In addition, notices of availability of the draft plan and EIS/EIR were mailed to approximately 5,000 floodplain residents and property owners. A notice of availability was also printed in local newspapers and in the Federal Register. These notices generated 232 requests by private citizens for copies of the draft plan and EIS/EIR. All requests were fulfilled.

Summary of Comments and Responses

Of the approximately 400 copies of the watershed plan and EIS/EIR distributed, 15 letters of comment were received. Appendix A contains copies of the comments received. Of those responding, five indicated they had no comments or recommendations to offer on the document and are listed as follows:

Federal Energy Regulatory Commission
Resources Agency of California
Santa Clara County Intergovernmental Council
U.S. Department of Agriculture, Office of the Secretary,
  Office of Minority Affairs
U.S. Department of Interior, Bureau of Indian Affairs

The remaining 10 letters had comments or recommendations to offer on the draft plan and EIS/EIR. In addition, a public hearing was held on April 20, 1983, to solicit oral comments concerning the document. The following is a summary of the written and oral comments.

Written Comments:

Federal Agencies

U.S. Army Corps of Engineers

Comment: The proposed construction project will require Department of the Army Authorization under Section 404 of the Clean Water Act.

Response: The necessary 404 permit will be requested prior to initiation of construction.

U.S. Department of Commerce-National Oceanic and Atmospheric Administration

Comment: Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for the project include the cost of any relocation required.

Response: At this time, it appears no geodetic control survey monuments will be affected by the project. However, the NOS will be contacted within the time limit required to identify any monuments that may be present in the construction area. Should any monuments require relocation, the relocation costs would be paid for with project funds.

U.S. Department of Health and Human Services--Public Health Service

Comment: The draft EIS does not address mosquito or other vector populations in relation to the project. What is the extent of existing vector populations? How will these populations be changed as a result of the project. If control measures are needed, will pesticides be used, in what amounts, and how will they be applied? Vegetation clearing and maintenance efforts need to be further clarified and a discussion included on application procedures and environmental techniques which may be employed.

Response: The Santa Clara County Environmental Health Services Department was contacted to obtain data on existing vector populations in the project area. The department monitors problem areas for mosquito breeding habitat rather than keeping records on mosquito populations. Presently Lower Silver Creek is not a problem area. SCS and the department agree that installation of the project will reduce breeding habitat because the project will reduce vegetation and pooling of water in the channel bottom. The current control measures consisting mainly of Gambusia (mosquito fish) will continue to be used. In instances where Gambusia are not adequate, a mosquito larvicide oil base spray is used.

Rodents may inhabit the mitigation planting sites but their populations will be reduced in other areas where vegetation is removed and the channel concrete-lined.

Currently, normal maintenance activities to remove vegetation and debris from the channel include mechanical means, hand labor, and approved herbicides. These methods will continue to be used when the project is installed to maintain the design capacity of the channel.

Comment: The final EIS should further discuss the proposed project in relation to Executive Order 11988, Floodplain Management. This proposed project appears to violate the spirit and intent of that Executive Order. Although providing protection to developers and residents who, subsidized by Federal Flood Insurance, knowingly located in an area subject to flooding may be beneficial, project completion does provide "direct or indirect support of floodplain development." Construction of this project will also permit additional development of the remaining vacant land in the project boundaries.

Response: We disagree with your statement that the proposed project violates the spirit and intent of Executive Order 11988. The objective of Executive Order 11988 is "to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development whenever there is a practical alternative. As noted on page 28, the floodplain is 95 percent developed (leaving about 55 acres of scattered parcels of land undeveloped). On page 81 it is indicated that the remaining infilling of development on the 55 acres is expected to occur prior to project construction. Therefore, the proposed project will not encourage any further development and there are no practical alternatives to avoid infilling (development) on these last undeveloped parcels in the floodplain.

Your statement that developers and residents "knowingly" developed in the floodplain is without foundation. Page 28 provides information that indicates about 70 percent of the development in the floodplain occurred prior to 1975. The first flood hazard boundary maps for the area were not completed until 1975. Therefore, 70 percent of the development took place before people knew where the floodplain boundaries were located (the preliminary flood insurance maps were not published until 1978). Irrespective of the above facts, we also note that Executive Order 11988 does not differentiate between people who "knowingly" or "unknowingly" developed in floodplain areas.

Lastly, Executive Order 11988 makes no reference to "remaining vacant lands" outside the floodplain areas but within project boundaries.

Comment: The final EIS should address the effect of this project on downstream water quality and bottom sediments. Have water quality samples and/or bottom sediment samples been taken to determine existing background data? Will storm runoff and future sedimentation contain toxic materials that will affect downstream water or bottom sediments?

Response: Storm runoff and floodwaters may have picked up toxic chemicals from urbanized areas in the watershed in past years. These materials may have washed into Coyote Creek and downstream areas. The project will not change storm runoff but will reduce flooding. Consequently, chances for chemicals to be transported by overbank flows will also be reduced.

Because of the minimal downstream impacts, EPA's Storet data files were used instead of collecting water quality or bottom sediment samples.

U.S. Department of the Interior

Comment: The area known as Mayfair Park has received matching assistance from the Land and Water Conservation Fund (L&WCF) for land acquisition and development of public recreation facilities. Section 6(f) of the L&WCF (78 Stat. 897) requires that changes from recreational use be approved by the Secretary of the Interior. The city of San Jose and the California Department of Parks and Recreation will need to be consulted to determine whether Mayfair Park will be affected by the proposed project.

Response: The city and state were contacted to ascertain if the proposed project would affect those lands and/or facilities financed through the L&WCF. No facilities will be impacted. The plan does propose to enlarge the earthen channel section through the park. The amount of park land needed to accomodate the enlargement is 0.26 acres. This 0.26 acres was purchased with L&WCF monies. The city and state have determined that no conversion from recreational use will occur as a result of enlarging the channel through the park. Therefore, section 6(f) of the L&WCF does not apply. The city will maintain ownership of the 0.26 acres and park users will continue to have access to the creek. Letters from the city and state with their determinations have been included at the end of Appendix A.

Comment: Measures to mitigate/compensate for fish and wildlife resource losses are satisfactory. The small amount of sediment increase predicted with the project is not expected to have any significant impact on fish and wildlife in south San Francisco Bay.

Response: Comment noted.

Comment: Circular 39 was used to classify wetlands in the project area. The Fish and Wildlife Service prefers to use the Classification of Wetlands and Deepwater Habitats in the United States, FWS/OBS 79/31, December 1979, for this purpose.

Response: The Soil Conservation Service has not officially adopted the new classification system. The new system is currently being tested and evaluated by SCS in the field. SCS procedures dictate that we use the Circular 39 classification system until the new system is officially adopted by SCS.

Comment: If a Section 404 permit from the Corps of Engineers is required, we would provide comments on the application under authority of the Fish and Wildlife Coordination Act.

Response: Comment noted.

U.S. Environmental Protection Agency

Comment: The project will remove a constraint to development of upstream areas. The final environmental impact statement/report should provide an estimate of the population growth which would occur in upstream areas as an indirect result of the project, as well as an estimate of the air quality degradation which would occur as a result of that population growth.

Response: As stated on page 81, development in the upstream areas is planned for by the city of San Jose and is controlled by the Evergreen Development Policy of the general plan for the city. This project will not open up any land for development that is not already planned for growth.

Should the Evergreen planning area (the upstream areas are located in this planning area) develop to its maximum holding capacity, this would result in an increase of approximately 9,000 dwelling units and an increase in populaton of about 36,000 through the year 1990 according to projections of the general plan. This increase is over 1975 figures.

Development in the Evergreen planning area is occurring in an orderly manner through the efforts of the San Jose Planning Department. Currently, the most significant limiting factor is lack of roads. For this reason, the city has imposed a maximum limit on additional dwelling units through 1984.

An estimate of the impacts of development on air quality was based on a consultant's study conducted by URS Research in 1976. The study, based on 8,300 dwelling units being completed through the year 1990 in the Lower Silver Creek Watershed, concluded that air quality degradation would be minimal (emissions would be no more than one-fourth of 1 percent of total county emissions).

Comment: Several statements concerning air quality during construction are made (pages 26, 81, and 82) that conflict with the "No effect" on air quality in Table Q, page 84. The final environmental impact statement/report should replace "No effect" with a statement of what the effect on air quality will be.

Response: Table Q refers to long-term or permanent effects. We have added a footnote to Table Q that denotes that there may be some temporary short-term adverse impacts on air quality during construction. This would be limited to the immediate construction area.

Comment: Although the draft environmental impact statement/report states that "...air pollution...regulations will be adhered to" (page 62) and that "Steps will be taken to minimize dust and exhaust emissions during construction" (page 26), the final report should specify those steps including all measures necessary to prevent violations of air quality standards.

The final environmental impact statement/report should discuss related water quality impacts, including wet weather construction. Specific mitigation measures which will be implemented to avoid or control erosion and sedimentation should be presented.

Response: A statement has been added to the mitigation section on page 62 that outlines the procedure that will be used in complying with air and water quality standards. Some examples of measures to prevent violations of air and water quality standards are also included. These measures are consistent with Soil Conservation Service standards and specifications for construction activities.

U.S. Forest Service

Comment: Documentation should be provided in regards to the statement that fire is not a common problem in the watershed. The documentation should include data on the number of fires and acreages burned in an average year that the California Department of Forestry has firefighting responsibility for.

Response: A sentence has been added on page 35 that details the number of fires and acreages burned in the watershed during the past six years.

Comment: Documentation should include data for extreme fire years that may occur once in 10, 25, or 50 years, especially if these extreme fire years occurred in conjunction with a 10-, 25-, or 50-year storm. There would likely be a real impact in the watershed should this occur.

Response: Specific data relating the extreme fire years and extreme rainfall years and eithers' effect on erosion is not available. The plan does state on page 35 that should wildfires occur prior to the rainy season, erosion rates can be expected to increase by a factor of 10 (up to 90 tons per acre).

Comment: Mention is made to the lack of combustible material on page 35. While large grassfires may be infrequent, they are very flashy and quick to spread to large acreages under the right conditions.

Response: The statement about lack of combustible material and climatic conditions has been deleted.

We feel, however, that the statement about wildfire not being a common problem is still valid considering the infrequency of grassfires that occur in the watershed.

Comment: Your list of coordinating and review agencies does not include the California Department of Forestry. They were mentioned in your statement of the lack of a fire problem. Were they interviewed?

Response: The California Department of Forestry records were reviewed to obtain the data added on page 35.

Local Government Agencies

City of San Jose

Comment: Parks and Recreation Department--The proposed improvements outlined can be accomodated and beneficial to the existing developed parks adjacent to the creek. Plata Arroyo and Mayfair Parks are improved and subject to Section 1700 of the City Charter with respect to dedication of rights-of-way or easements required in this project.

Response: Comments noted.

Comment: Public Works Department--Existing overland flow patterns will be altered by the berming proposed along certain reaches (Figure 7). Concerted effort should be expended to keep ponding depths in streets adjacent to the channel from increasing.

Response: Berms (levees) are proposed along four reaches of the channel. These four reaches already contain berms. The plan calls for slightly increasing their height. One reach of channel (near the outlet) will contain berms on both sides of the channel. The second paragraph on page 51 states that "Drainage inlets will be provided to allow drainage and storm runoff to enter the channel." Therefore, we do not anticipate any increases in the ponding depths in streets. The added channel capacity due to channel enlargement is likely to decrease street ponding in many areas.

Comment: Police Department--We feel both the figures and time delays discussed on page 16 with respect to traffic re-routing are extremely conservative and very possibly could be doubled.

Response: Estimates of traffic disruptions, vehicle re-routing and the associated time delays were developed using data supplied by the city. In requesting the data, we asked for only the "major roadways" and asked for conservative estimates. We agree with your comment, but because we cannot predict the timing of a flood event, we sought to establish an average estimate.

Comment: Police Department--The assistance of law enforcement and the associated costs are discussed on pages 17 and 18. Recent figures available on the money expended at the Alvisio flood this year indicate that, with the increased size of the Lower Silver Creek floodplain, estimates of the costs could easily be 100 times the amount stated.

Response: Estimates of emergency services costs which include the costs of law enforcement, floodplain evacuation, and temporary shelters, were developed from information supplied by the city's Office of Emergency Services and Police Department, as well as the Red Cross. Much of this information was based on the 1982 flooding at Alvisio. The data we received was preliminary and quite possibly the numbers have increased since we requested the data. In addition, the flooding of Alvisio is somewhat different than what would occur in the Lower Silver Creek floodplain and the numbers were adjusted downward to account for this. As was the case in the transportation study, we used conservative numbers and agree that the costs may be higher than we estimated, perhaps by a factor of two. We do not, however, believe costs are underestimated by 100 times. Perhaps you are confusing "average annual" estimates with a one-time flood event. For instance, we estimated that at the 100-year flood event, emergency services costs would be $212,000.

Comment: Emergency Services Department--The report refers to threat of serious injury or possible death due to flooding. The city feels such threat is unlikely. The city maintains a flood watch whenever conditions could lead to flooding and would evacuate institutionalized populations (retirement center, school children) and would support evacuation of residential and commercial populations in advance of actual flooding.

Response: SCS feels the potential does exist for serious injury or loss of life given the following conditons (pages 18, 19, and 30).

--621 homes, one school, and one retirement center are located in areas where depths of floodwater exceed three feet and have an average velocity of three feet per second,

--20 percent of the residents are under nine years of age,

--many of the residents are unaware of the flooding potential in this area as nearly 70 percent of this area has been developed since the last major flood occurred,

--there will be only about one hour to warn 19,000 people of an impending flood and the city does not have a flood warning device other than conventional communications; and

--traffic and road closures will prohibit a timely and orderly evacuation.

County of Santa Clara--Parks and Recreation Department

Comment: The project will impact the proposed trail along Lower Silver Creek from Lake Cunningham to the confluence of Coyote Creek. All new bridge structures crossing the creek should keep in mind the trail continuity and height clearance for its use.

Response: The project, as planned, does not include a trail system nor does it involve replacing any bridges. The public participation program that was conducted throughout the planning process indicated that the citizens overwhelmingly rejected a trail system at this time.

However, the proposed project does not preclude the incorporation of a trail system within the channel right-of-way should the Parks and Recreation Department and the local citizens deem it desirable in future years.

Private Citizens

Paula Johnson

Comment: What is the useful life of the project? Projected runoff increases due to increased urbanization may warrant a larger project with enough capacity to handle what will become the 100-year flood after further urbanization in the watershed.

Response: The project is designed for 100 years. The project was designed to accomodate the runoff generated by the 100-year flood based on full development as projected in the general plans of the city and county.

Comment: The section on air quality lists autos as the major source of ozone. Ozone is not emitted by autos but is created in the atmosphere by the interactions of sunlight, nitrous oxides, and carbon oxides.

Response: The statement on page 26 has been corrected.

Comment: The section on air quality states that air quality standards were exceeded four times in 1981. For what pollutant(s) was the standard exceeded? Do the figures for 1981 and 1982 vary significantly?

Response: The ozone, or photochemical smog, standard of 0 .12 ppm was exceeded four times in 1981. We do not have data on 1982. However, a comparison between 1978, 1980, and 1981 shows that the standard was exceeded six times in 1980 compared to four times in 1981. The standard was exceeded 17 times in 1978. A statement has been added on page 26 to clarify what standard was exceeded.

Comment: Does the periodic removal of channel vegetation significantly affect fauna populations? Can this be mitigated by only cleaning out sections of channel at a time so that some habitat is always available?

Response: Removal of channel vegetation as a result of this project will not significantly affect fauna populations. This project will result in the removal of 4.6 acres of scattered small trees and weedy annuals with little wildlife habitat value. As stated on page 31 wildlife along Lower Silver Creek is limited to only a few species, including bullfrogs, treefrogs, rats, and birds. The majority of the channel will be concrete-lined and will support only limited numbers of herbaceous plant species. Removal of vegetation in the earthen sections of channel will be done only as needed to ensure that the designed channel capacity is maintained. The earthen sections of channel proposed in this project constitute only .87 miles and are located in close proximity to each other. For this reason, normal maintenance activities to remove vegetation from the channel will probably be done at the same time. The riparian mitigation plantings will be sustained throughout the life of the project.

Comment: The "percent erosion" column in Table H (page 36) does not add up to 100 percent.

Response: The 14 percent for existing roads was a misprint. This has been corrected to read 4 percent.

Comment: The EIS/EIR states that the Evergreen Resource Conservation District's land treatment program has "adequately" treated 70 percent of the watershed to reduce sediment yields. What is the definition of adequate? Does this mean the erosion rate is equal to the rate of soil formation?

Response: Land is adequately treated when those conservation practices and management systems necessary to arrest or prevent deterioration and maintain the productive capability of the resource base have been installed. In general, when land is adequately treated the erosion rate is equal to the rate of soil formation.

Comment: "FIA" regulations, mentioned on page 42, and "weep" holes, mentioned on page 68, are not defined in the glossary.

Response: "FIA" is the acronym for the Federal Insurance Administration. The final plan and EIS/EIR, on page 42, has been changed to clarify this. The definition for "weep" hole has been included in the glossary.

Comment: To evaluate the degree of mitigation, the EIS/EIR should include details such as approximate number of trees, approximate tree sizes, and some of the major types of tree and shrub species to be planted.

Response: The EIS/EIR specifies the number of acres to be planted to mitigate the removal of vegetation along the channel during construction. The EIS/EIR also states that the plants selected will emphasize native species associated with riparian ecosystems. The sizes and numbers of trees and shrubs to be planted will be determined during final plan design.

Comment: What are the estimated reductions in flood insurance premiums for floodplain residents after project completion?

Response: All property owners who currently pay flood insurance and who will be removed from the floodplain once the floodplain maps are revised will no longer have to pay flood insurance. We expect the new maps will approximate Figure B-1 in this plan. The current cost of flood insurance for a home in the area ranges from $180 to $200 per year.

Comment: Any projects which are planned to solve Coyote Creek and/or Lower Penitencia Creek flooding problems should be included in the EIS/EIR, explaining the interactions between all of these projects. The timing of related projects and specifics about design capacities, flow rates, flood peak timing, and peak durations should be included.

Response: The Project Interaction section (page 51) explains the interaction of the proposed project with other existing or proposed projects that have a high probability of being installed. Although Coyote Creek and Upper Penitencia Creeks both have flooding problems no approved plans for flood control on these creeks exist at this time. This plan does address potential interaction should work be done on Coyote Creek. However, we believe Lower Silver Creek will be the first of the three creeks to have works of improvements installed. Therefore, flood control improvements planned for Coyote and Upper Penitencia Creeks will have to be designed to function with the Lower Silver Creek project installed.

Comment: The final document should include a map of the drainage system for the entire watershed and the location of the outlet into San Francisco Bay. The project maps don't show Coyote Creek or any other confluences downstream.

Response: The map on page 10 shows the entire drainage area of the Lower Silver Creek Watershed. Since the outlet for Lower Silver Creek is Coyote Creek we limited the boundary of our maps to the confluence of these two streams. However, the downstream areas are discussed verbally in the Existing Resources section on page 37. Figures 1, 5, 6, 7, B-1, B-2, and the project map all show the confluence of Lower Silver Creek with Coyote Creek.

Comment: Since the "no project" alternative is undesirable, there are only two alternatives. The lack of other alternatives is the real weakness of this document. It doesn't seem possible that there is no viable alternative between $3,010,000 and $13,954,000.

Response: Several different alternatives (measures) were investigated during the planning process. The Formulation of Alternatives section (page 41) describes the measures investigated. Only two measures (floodproofing and channel enlargement) proved economically feasible. Several alternatives were investigated using combinations of the two measures. Several levels of protection were also investigated. The two alternatives that appear in this document are the alternatives that produced the highest net benefits. A major federal formulation criteria is to attain the highest level of net benefits.

Mr. John Karas, Jr.

Comment: I am tendering an objection to the proposed flood control project. It is my opinion that the city of San Jose and the Santa Clara Valley Water District have taken undue advantage of the residents and property owners in Santa Clara County in the funding and assessment for completion of these projects. Also, the federal and state laws concerning these flood control projects have every indication of placing unnecessary burdens on the taxpayer and homeowner.

Response: Comment noted. See response to Mr. Karas' oral comment.

Oral Comments:

Patrick Ferraro

Comment: What is the project's design Q?

Response: The design discharge is 6,100 cfs at the confluence with Coyote Creek.

Comment: What was your confluence backwater condition on Coyote Creek?

Response: The backwater on Coyote Creek was assumed to be at elevation 80.6 feet. This relates to the 100-year event on Coyote Creek.

Comment: Is the 100-year event occurring on Coyote Creek at the same time as on Lower Silver Creek?

Response: Yes, about the same time.

Comment: What is the duration of flooding on Coyote Creek at the confluence with Lower Silver Creek?

Response: The duration of out of bank flooding will be about 25 hours after the Lower Silver Creek project is installed. This is about four hours longer than the before project condition. This is because the project will speed up the flow of water through the Lower Silver Creek Channel into Coyote Creek.

Sam Jones

Comment: What is the difference in a trapezoidal and a "u" shaped (rectangular) channel? Why do you switch from one to the other? Does one have more capacity or flow? What is the safty hazard?

Response: The "u" shaped or rectangular channel is used when sharp turns or right-of-way is a problem because it can pass more water in a quicker fashion. All concrete channels will be fenced and a traffic barrier will be installed along King Road which is the site of one reach of rectangular channel.

John Karas

Comment: Since this project is of such a magnitude, why wasn't this meeting held at the city council chambers?

Response: Responsibility for this project rests with the Santa Clara Valley Water District and not the city of San Jose. Since this was a night meeting and attendance was expected to be small, we wanted to accomodate the floodplain residents by holding the meeting in the neighborhood.

Comment: I know a number of people are opposed to this project because of the assessment placed on them. I understand it is a continuing assessment that will go on forever.

Response: The assessment is a county-wide assessment to finance all flood control projects in the county including their operation and maintenance. Every 10 years the assessment is voted on by county residents. It must be passed by the voters for the assessment to continue.

Comment: After the project is installed, will there be a re-evaluation of the flood zone for flood insurance and safety considerations? Will the boundaries be reduced?

Response: Yes, there will be a re-evaluation of the flood zone (for further explanation of the procedures in redefining the flood zone and their ramifications, see the response given to the Paula Johnson comment on FIA regulations).

Russel McDonald

Comment: Is there any record of Lower Silver Creek ever overtopping its banks other than in the area where Lake Cunningham is now located or in the downstream area near Penitencia Creek? The main problem is in the Penitencia Creek Watershed and this should receive a higher priority than Lower Silver Creek.

Response: Three factors account for the lack of flooding in the Lower Silver Creek Watershed over the past 25 years.

--No significant rainfall since 1955-56; in fact, some drought years were encountered,

--The watershed was relatively undeveloped until 1970. Since then nearly 70 percent has been urbanized. This urbanization has created a high potential for flooding although no major storms have occurred during this time except for the past two years.

--Five years ago the trapping of flood stages was incorporated into Lake Cunningham. This temporary storage has protected the floodplain during the last two years. Even with the protection provided by Lake Cunningham, the creek was within three inches of overtopping its banks this past winter. This temporary storage will be eliminated in 1986 with the completion of Lake Cunningham Park.

The Santa Clara Valley Water District is currently conducting a study to address the problems on Upper Penitencia Creek. They have recently asked the Soil Conservation Service for assistance in studying the creek. This will be a separate study unrelated to Lower Silver Creek.

Comment: An earlier plan called for relocation of 11 homes. Does this plan still contain this provision?

Response: No. This plan will not require the relocation of any homes.

Comment: The only notification I got of this meeting was that I happened to read the notice in the newspaper. I wonder how many other people were not aware of this meeting because they received no notification.

Response: For each of the three public meetings that were held, over 5,000 notices were mailed to individuals. In addition, articles or notices were placed in several of the local newspapers. As you can imagine, when dealing with the large number of people that we are dealing with in this project, it is quite possible that we will miss a few. We apologize, if in fact we did.

William Raub

Comment: Some of my colleagues have collected rainfall and soils information for the Babb Creek Watershed which is a tributary to Lower Silver Creek. Due to the high rainfall this year, we have noticed several earth "slips" beginning to occur and feel many others are likely should we have one more major storm. The resultant sediment will end up in the Lower Silver Creek channel and cause maintenance problems. I'm hoping we can put a debris basin on Babb Creek to alleviate this potential problem.

Response: The Santa Clara Valley Water District has received some of the data you speak of and will look into this problem on Babb Creek.

Ruth Vargas

Comment: Where is the location of the 5.6 acres of right-of-way required for the project? I have a house located next to the channel. Will my property be affected?

Response: The 5.6 acres is composed of strips of land located adjacent to the planned earthen sections of channel (see Figure 7). Your property will not be affected.

LIST of PREPARERS, INDEX, FOOTNOTES, REFERENCES

LIST OF PREPARERS AND QUALIFICATIONS

NAME	PRESENT TITLE - YEARS	EDUCATION (Degree(s) Continuing Education Subjects)	PREVIOUS EXPERIENCE (Titles and Years)	OTHER
SCS Watershed Planning Staff				
Crow, Steven R.	Soil Conservationist - 2	BS - Wildlife Conservation		
DeTullio, David	Agricultural Economist - 7	BA - Economics MS - Agricultural Economics	Soil Conservation District Program Coordinator - 2	
Fontenot, Wildon	Planning Staff Leader - 8	BS - General Agriculture MS - Agricultural Economics Candidate for PH.D in Natural Resource Administration	Watershed Agricultural Economist - 5 River Basin Agricultural Economist - 1	Member - Soil Conservation Society of America
Gonzales, Cathy	Information Clerk - 1/2	BA - Social Welfare	Secretary - 6	
Gray, Randall L.	Biologist - 3	BA - Animal Biology MA - Biology	California Fish and Game - 1 Soil Conservationist - 2 Field Biologist (Wetlands) - 2 Wildlife Management/Ecology Instructor - 4	Member - Wildlife Society Member - Ecological Society of America
Hansen, Lester L.	Planning Engineer - 5	BS - Agricultural Engineering	Agricultural Field Eng. - 14	Professional Engineer - CA
Kniss, Kathleen	Engineering Draftsman - 1	BS - Landscape Architecture	Landscape Architecture Intern - 1	Member - American Society of Landscape Architecture
Schmit, Edward J.	Hydraulic Engineer - 10	BS, MS - Agricultural Engineering	Agricultural Field Eng. - 5	Professional Engineer - CA
Snieckus, Bob	Landscape Architect - 5	BS - Landscape Architecture		Member - American Society of Landscape Architecture
Steffen, Lyle J.	Geologist - 8	BS, MS - Geology	Ground Water Geologist - 3	Member - Soil Conservation Society of America
Won, Bill	Civil Engineering Technician - 4	AA - Civil Engineering	Engineering Technician - 5	

The draft watershed plan and environmental impact statement/report was reviewed and concurred in by SCS state staff specialists having responsibility for engineering, soils, agronomy, range conservation, biology, forestry, and geology. This review was followed by review of the document and supporting data by the SCS West National Technical Center. A similar review was also provided by Forest Service personnel.

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APPENDICES

APPENDIX A
LETTERS AND COMMENTS ON DRAFT PLAN-EIS

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
211 MAIN STREET
SAN FRANCISCO, CALIFORNIA 94105

SPNPE-TE

To: U.S. Department of Agriculture
Soil Conservation Service
2828 Chiles Road
Davis, CA 95616

18 April 1983

Subject: Draft Watershed Plan and EIS/EIS, Lower Silver Creek Watershed, Santa Clara County, California

Your request for comments from this office was received on 14 March 1983 by your (letter) ~~[illegible]~~ dated 10 March 1983.

( ) The proposed activity is an administrative action and therefore will not require Department of the Army authorization. However, any construction resulting from this action may require Department of the Army authorization. For additional information please contact our Regulatory Functions Branch at 415-974-0418.

(X) The proposed construction project ~~[illegible]~~ (will) ~~[illegible]~~ require Department of the Army Authorization ~~[illegible]~~ under Section 404 of the Clean Water Act. A copy of our pamphlet "U.S. Army Corps of Engineers Permit Program, A Guide for Applicants," (is inclosed). ~~[illegible]~~ For additional information please contact our Regulatory Functions Branch at 415-974-0418.

( ) The following Corps projects or studies may be impacted:

( ) Any impacts on wetlands, threatened or endangered species, other valuable fish and wildlife resources, or on cultural resources are among the important environmental considerations for all Corps permit applications. Other areas of environmental concern specific to this project are:

Questions concerning our environmental review can be referred to Mr. Lars Forsman at 415-974-0440. Thank you for including us in your review process.

CF:
Proj Files EIR/884 Review
SPNPE Rdg
SPNCO-R
SPNPE-TH
SPNPE-TE Rdg
SPNPE-TE
~~[illegible]~~
~~[illegible]~~
CWP-V
SPDPD-R

Robert R Mooney
ROBERT R. MOONEY
Chief, Project Evaluation Section
Technical Support Branch

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, D.C. 20235
OFFICE OF THE ADMINISTRATOR

April 13, 1983

Mr. Eugene E. Andreuccetti
State Conservationist
Soil Conservation Service
Department of Agriculture
2828 Chiles Road
Davis, CA 95616

Dear Mr. Andreuccetti:

This is in reference to your draft Watershed Plan Environmental Impact Statement/Report for Lower Silver Creek Watershed in Santa Clara County, California. Enclosed are comments from the National Oceanic and Atmospheric Administration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving two copies of the final environmental impact statement.

Sincerely,

Joyce Wood

Joyce M. Wood
Chief
Ecology and Conservation Division

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Washington, D.C. 20230

TO: PP2 - Joyce M. Wood

FROM: N - K. E. Taggart

SUBJECT: DEIS 8303.10 - Lower Silver Creek Watershed, Santa Clara County, California, Reduction of Flood Damages to Urban Areas in the Eastern Portion of the City of San Jose (U.S. Department of Agriculture, Soil Conservation Service)

The subject statement has been reviewed within the areas of the National Ocean Service's (NOS) responsibility and expertise, and in terms of the impact of the proposed action on NOS activities and projects.

Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days' notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation required for NOS monuments. For further information about these monuments, please contact Mr. John Spencer, Director, National Geodetic Information Center (N/CG17) or Mr. Charles Novak, Chief, Network Maintenance Branch (N/CG162), at 6001 Executive Boulevard, Rockville, MD 20852.

10TH ANNIVERSARY 1970-1980
National Oceanic and Atmospheric Administration
A young agency with a historic
tradition of service to the Nation

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
Atlanta GA 30333
(404) 452-4257

April 25, 1983

Mr. Eugene E. Andreuccetti
State Conservationist
Soil Conservation Service
2828 Chiles Road
Davis, California 95616

Dear Mr. Andreuccetti:

We have reviewed the Draft Environmental Impact Statement (EIS) for Lower Silver Creek Watershed, Santa Clara County, California. We are responding on behalf of the Public Health Service.

The Draft EIS does not address mosquito or other vector populations in relation to the project. What is the extent of existing vector populations? How will these populations be changed as a result of this project? Will they increase or decrease? If control measures are necessitated, will pesticides be used, in what amounts, and how will they be applied? Vegetation clearing and maintenance efforts need to be further clarified. If so, the Final EIS should discuss any application procedures and environmental techniques which may be employed.

The Final EIS should further discuss this proposed project in relation to Executive Order 11988, Floodplain Management. This proposed project appears to violate the spirit and intent of that Executive Order. While it may be beneficial to provide protection to those developers and residents who, subsidized by Federal flood insurance, knowingly located in an area subject to flooding, project completion does provide "direct or indirect support of floodplain development." Construction of this project will also permit additional development of the remaining vacant land in the project boundaries.

The Final EIS should address the effect of this project on downstream water quality and bottom sediments. Have water quality samples and/or bottom sediment samples been taken to determine existing background data? Will storm runoff and future sedimentation contain toxic materials that will affect downstream water or bottom sediments?

Thank you for the opportunity to review this Draft EIS. Please send us a copy of the final document when it is available. If you should have any questions about our comments, please contact Mr. Lee Tate at FTS 236-4163.

Sincerely yours,

Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Center for Environmental Health

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER 83/356

APR 26 1983

Mr. Eugene E. Andreuccetti
State Conservationist
Soil Conservation Service
2828 Chiles Road
Davis, California 95616

Dear Mr. Andreuccetti:

We have several comments to offer on the draft environmental statement and Watershed Plan for the Lower Silver Creek Watershed, Santa Clara County, California.

The area known as Mayfair Park has received matching assistance from the Land and Water Conservation Fund (L&WCF) for land acquisition and for development of public recreation facilities. Park and recreation areas receiving monies from the Fund are subject to the provisions of Section 6(f) of the L&WCF (78 Stat. 897), as amended. This section of the act requires that changes from recreational use be approved by the Secretary of the Interior. This section also requires the substitution of other properties of at least equal fair market value and reasonably equivalent usefulness and location for any recreation land taken. To determine whether Mayfair Park would be affected by the proposed project, the project sponsors will need to consult with the City of San Jose and the California State Liaison Officer: Attn: Mr. Warren Gardner, California Department of Parks and Recreation, P.O. Box 2390, Sacramento, California 95811.

Measures planned to mitigate/compensate for fish and wildlife resource losses are satisfactory. The small amount of sediment increase predicted with the project is not expected to have any significant impact on fish and wildlife in south San Francisco Bay. We note that the Soil Conservation Service used Circular 39 to classify wetlands in the project area. While this system is still useful in certain instances, the Fish and Wildlife Service prefers to use the Classification of Wetlands and Deepwater Habitats in the United States, FWS/OBS 79/31, December 1979, for this purpose. Also, if a Section 404 permit from the Corps of Engineers is required, we would provide comments on the application under authority of the Fish and Wildlife Coordination Act.

Thank you for the opportunity to comment on this proposal.

Sincerely,

Bruce Blanchard, Director
Environmental Project Review

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

Mr. Eugene Andreuccetti
State Conservationist
Soil Conservation Service
2828 Chiles Road
Davis, California 95616

APR 29 1983

Dear Mr. Andreuccetti:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement/ Report (DEIS/R) titled LOWER SILVER CREEK WATERSHED, SANTA CLARA COUNTY, CALIFORNIA. We have the enclosed comments regarding this DEIS/R.

We have classified this DEIS/R as Category LO-2. Definitions of the categories are provided by the enclosure. The classification and date of EPA's comments will be published in the Federal Register in accordance with our public disclosure responsibilities under Section 309 of the Clean Air Act.

We appreciate the opportunity to review this DEIS/R. Please send three copies of the Final EIS/R to this office at the same time it is officially filed with our Washington, D.C. office.. If you have any questions, please contact Loretta Kahn Barsamian, Chief, EIS Review Section, at (415) 974-8188 or FTS 454-8188.

Sincerely yours,

Charles W. Murray

Charles W. Murray, Jr.
Assistant Regional Administrator
for Policy, Technical, and
Resources Management

Enclosures (2)

Air Quality Comments

Our scoping letter of December 29, 1982 requested that the DEIS/R:

1. Substantiate the assumption that urban growth in San Jose would not occur as a direct or indirect result of the project.

2. Specify the steps that would be taken to minimize dust and exhaust emissions during construction.

On p. 81, the DEIS/R states that the project "...will remove a constraint to development of upstream areas..." and that those areas "...are planned for development." The FEIS/R should provide an estimate of the population growth which would occur in upstream areas as an indirect result of the project, as well as an estimate of the air quality degradation which would occur as a result of that population growth.

The DEIS/R states that "Air quality standards probably will be exceeded during construction" (p. 26), that "Dust generation...will adversely impact nearby residents during construction" (p. 81), and that "wind...erosion may occur during construction..." (p. 82).

The foregoing statements are in conflict with the "No effect" on Air Quality in Table Q, p. 84. The FEIS/R should replace "No effect" with a statement of what the effect on air quality will be.

Although the DEIS/R states that "...air pollution... regulations will be adhered to" (p. 62) and that "Steps will be taken to minimize dust and exhaust emissions during construction" (p. 26), the FEIS/R should, as requested, specify those steps including all measures necessary to prevent violations of air quality standards.

Water Quality Comments

The FEIS/R should discuss construction related water quality impacts, including wet weather construction. Specific mitigation measures which will be implemented to avoid or control erosion and sedimentation should be presented.

United States
Department of
Agriculture

Forest
Service

AP&D

2810 Chiles Road
Davis, CA 95616

Reply to:

Date: May 4, 1983

Subject: 3510 - Lower Silver Creek Watershed - Comments on the Draft Plan and Environmental Impact Report

To: Eugene Andreuccetti, State Conservationist
Soil Conservation Service
Davis, California

I have read and reviewed the above listed document and have a few questions and comments. With the exception of two comments on the Draft Plan and EIR, I think that the document is very complete. Most of my earlier concerns seem to have been clarified or corrected. It seems to be a good plan.

In the Plan and EIR my main concern is the attention paid to potential wildfire. On pages 33 and 34 there is a general statement to the effect that fire is not a common problem because of good climate conditions, lack of combustible material, and the presence of good fire prevention and control efforts. That general statement may well be the case but there needs to be some documentation.

The documentation could include data on the numbers of fires and acreages burned in an average year on lands that CDF has firefighting responsibility on, and further data for extreme fire years that may occur once in ten, twenty-five, or fifty years especially if those extreme years were to occur with your ten, twenty-five, or fifty year storm. As you can imagine, there would likely be a real impact in the watershed.

I question that there is a lack of combustible material. While large grassfires may be infrequent they are very flashy and quick to spread to large acreages under the right conditions.

On pages 80-82 your list of coordinating and review agencies does not include the California Department of Forestry (CDF). They were mentioned in your statement of the lack of a fire problem. Were they interviewed?

There have been some delays in getting our comments to your Watershed Planning Staff in the recent past. The most probable cause is the fact that you have sent your reports to the Watershed Management Staff in our Regional Office. I would like to request that the addressee of record be changed to the Area Planning and Development Staff in the Division of State and Private Forestry, c/o U.S. Forest Service, 630 Sansome Street, San Francisco, CA 94111, rather than the Watershed Management Staff.

I have talked with members of the Watershed Planning Staff about the fire problem comments, and have volunteered to provide documentation on that problem for the interagency review draft in the near future. Thank you for the opportunity to comment.

Sincerely,

RONALD W. HANSON
Forester

CITY OF SAN JOSÉ, CALIFORNIA

801 NORTH FIRST STREET
SAN JOSE, CA 95110
(408) 277-4433

CITY MANAGER

April 15, 1983

Mr. Eugene E. Andreuccetti
State Conservationist
U. S. Department of Agriculture
2828 Chiles Road
Davis, CA 95616

Dear Mr. Andreuccetti:

SUBJECT: WATERSHED PLAN EIS FOR LOWER SILVER CREEK WATERSHED

On behalf of the City of San Jose, I am submitting the following comments on the above Environmental Impact Statement for the Lower Silver Creek Watershed.

Parks & Recreation Department

The plan is consistent with previous communications and requirements voiced concerning the integration of this project to the Coyote Creek Park Plan, Plato Arroyo Park, Mayfair Park and Lake Cunningham. We believe the proposed improvements outlined can be accommodated and beneficial to our existing developed parks in these reaches.

Plato Arroyo and Mayfair Parks are improved and subject to Section 1700 of the City Charter with respect to dedication of rights-of-ways or easments required in this project.

Hydraulics/Transportation Division-Public Works Department

The plan is consistent with previous Santa Clara Valley Water District plans for providing 100-year flood protection from Lake Cunningham to the confluence with Silver Creek.

One concern that we have is that the existing overland flow patterns will be altered by the berming proposed along certain reaches (Figure 7). Concerted effort should be expended to keep the ponding depths in streets adjacent to the channel from increasing.

Crime Prevention Detail/Police Department

On Page 17, vehicle re-routing and displacement is discussed. Since there are many major arteries included in the flood area, including Highway 101 between Coyote Creek and Highway 680,we feel both the figures and the time delays are extremely conservative and very possibly could be doubled. On Page 18, the assistance of law enforcement and the associated costs are discussed. Judging from the recent figures available on the money expended at the Alviso flood this year, and the increased size of the anticipated flood area, I would estimate that the cost could easily be 100 times the amount stated.

Emergency Services Department

Comments from this Department refer to the section "Problems and Opportunity Identification", "Flooding", on Page 19, and the section "Effects of Recommended Plan", "Social", on Page 79.

These sections refer to threat of serious injury or possible death and eliminating this threat. Such threat is unlikely. The City of San Jose maintains flood watch whenever conditions could lead to flooding. If flooding appeared likely, the City would evacuate institutionalized populations (school children and persons at the retirement center, etc.), and would advise and support evacuation of the residential and commerical populations. This would be accomplished in advance of actual flooding.

If you have any questions regarding these comments, please call (408) 277-4336, Jim Ferguson, Assistant Director, Public Works Department.

Sincerely,

Francis T. Fox

Francis T. Fox
City Manager

County of Santa Clara
California

Department of General Services

Parks and Recreation Department
298 Garden Hill Drive
Los Gatos, California 95030

Administration 358-3741 Area Code 408
Reservations 358-3751 Area Code 408

April 4, 1983

Mr. Eugene E. Andreuccetti
State Conservationist
Soil Conservation Service
2828 Chiles Road,
Davis, Ca., 95616

Dear Mr. Andreucetti :

Ré: Review Draft Watershed Plan - Environment Impact Statement/Report for Lower Silver Creek Watershed in Santa Clara County

The Santa Clara County Parks and Recreation Department appreciates the opportunity to review the above project.

In accordance to the Regional Parks, Trails, and Scenic Highways an element of the General Plan of Santa Clara County, the above project will impact the proposed trail along the Lower Silver Creek from Lake Cunningham to the confluence of Coyote Creek, see attached map. In addition, all new bridge structures crossing the creek should keep in mind the trail continuity and height clearance for its use.

For any questions, call (408) 358-3741.

Sincerely,

FELICE ERRICO
Park Planner

FE:bl

April 30, 1983

Eugene E. Andreuccetti
State Conservationist
Soil Conservation Service
2828 Chiles Rd.
Davis, CA. 95616

RE: Comments on Draft EIS/EIR for Lower Silver Creek Watershed

Dear Mr. Andreuccetti:

The following comments are suggested to improve the Final EIS/EIR. Although the organization of the Draft EIS/EIR is sometimes hard to follow, most of the information needed to analyze the project is presented in a clear, concise manner.

1. What is the useful life of this project? If further urbanization occurs in the watershed above the transition zone, the increased run-off will lower the capacity rating of the project to less than the 100 year flood. Projected run-off increases due to increased urbanization may warrant a larger project with enough capacity to handle what will become the 100 year flood event after further urbanization in the watershed.

2. The section on air quality lists autos as the major source of ozone. Ozone is not emitted by autos but is created in the atmosphere by the interactions of sunlight, nitrous oxides, and carbon oxides.

3. The section on air quality also states that air quality standards were exceeded four times in 1981. For what pollutant(s) was the standard exceeded? Do the figures for 1981 and 1982 vary significantly?

4. Does the periodic removal of channel vegetation significantly effect fauna populations? Can this be mitigated by only cleaning out sections of the channel at a time so that some habitat is always available?

5. Table H (page 36) lists the projected erosion for 1990. The 'percent erosion' column does not add up to 100 percent.

6. The EIS/EIR states that ERCD has "adequately" treated 70% of the watershed to reduce sediment yields. What is the definition of "adequate"? Does this mean the erosion rate is equal to the rate of soil formation?

7. "FIA" regulations are mentioned on page 42. What is the FIA? This should be included in the glossary. Also, "weep" holes are mentioned on page 67, and are not defined in the glossary.

8. The EIS/EIR mentions that trees and shrubs will be planted to mitigate the effects of the proposed project on aesthetics and wildlife. It would be easier to evaluate the degree of mitigation that this will achieve if the EIS/EIR included details such as the approximate numbers of trees, approximate tree sizes (1 gal., 5 gal., etc.), and some of the major types of tree and shrub species to be planted.

9. After the project is completed, what are the estimated reductions in flood insurance premiums for flood plain residents?

10. Any projects which are planned to solve Coyote Creek and/or Lower Penitencia Creek flooding problems should be included in the EIS/EIR, explaining the interactions between all of these projects. The timing of related projects, and specifics about design capacities,

flow rates, flood peak timing, and peak durations should be included. The final document should include a map of the drainage system for the entire watershed, and the location of the outlet into San Francisco Bay. The project maps included in the draft are excellent; however, they don't show Coyote Creek or any other confluences downstream.

11. Only three alternatives are evaluated in the EIS/EIR. Since the "no project" alternative is obviously undesirable, there are really only two alternatives. The difference between these two is so great that it gives the appearance that Plan 2 was decided upon before the EIS/EIR was written. The lack of other alternatives is the real weakness of the document. It doesn't seem possible that there is no viable alternative somewhere between $3,010,000 and $13,954,000. This gap is too great to be credible.

This EIS/EIR was generally well written and easy to understand. I hope that my comments will assist the SCS in preparing an excellent final EIS/EIR. Thankyou for this opportunity to comment.

Sincerely,

Paula L. Johnson

Paula L. Johnson
1593 Shenandoah Ave.
Milpitas, CA. 95035

TO:
MR. EUGENE E. ANDREUCETTI
STATE CONSRVATIONIST
SOIL CONSERVATION SERVICE
2828 CHILES ROAD
DAVIS, CALIF. 95616

APRIL 28, 1983

DEAR SIR:

AFTER SOME CAREFUL DELIBERATION AND COMPARISON OF LOWER SILVER CREEK WATERSHED FLOOD CONTROL PROJECT WITH THE OTHER FLOOD CONTROL PROJECTS FOR THE SAN JOSE-SANTA CLARA AREA, I AM TENDERING AN OBJECTION TO THE PROPOSED FLOOD CONTROL PROJECT.

I HAVE NO DOUBT THAT THIS PROJECT WILL BE COMPLETED REGARDLESS OF MY OBJECTION AND REASONS FOR IT, HOWEVER, IT IS MY OPINION THAT THE CITY OF SAN JOSE AND THE SANTA CLARA WATER WAXER CONTROL BOARD HAS TAKEN UNDUE ADVANTAGE OF THE RESIDENTS AND PROPERTY OWNERS IN THE SANTA CLARA COUNTY IN THE FUNDING AND ASSESSMENT E EVALUATION FOR THE COMPLETION OF THESE PROJECTS. ALSO, THE FEDERAL AND STATE LAWS CONCERNING THESE FLOOD CONTROL PROJECTS HAVE EVERY INDICATION OF PLACING UNNECESSARY BURDENS ON THE TAXPAYER AND HOMEOWNER. AFTER SOME REVIEW OF THE DEVELOPMENT AND FUNDING OF THE LAKE CUNNINGHAM PROJECT AND OTHER "PARK AND RECREATIONAL" PROJECTS IN THE SAN JOSE AREA, I SINCERELY BELIEVE THAT THIS OBJECTION IS A VERY LEGITIMATE DECISION.

SINCERELY,

John Karas

JOHN F, KARAS, JR.
2747 DUBLIN DR.
SAN JOSE, CALIF. 95127

cps

soil conservation service
mr. don edwards, congressman
mr. alister mcalister, assemblyman

FEDERAL ENERGY REGULATORY COMMISSION
333 MARKET STREET, 6th FLOOR
SAN FRANCISCO, CA. 94105

April 4, 1983

Mr. Eugene E. Andreuccetti
State Conservationist
U.S. Soil Conservation Service
2828 Chiles Road
Davis, California 95616

Dear Mr. Andreuccetti:

This is in response to your request for comments on your draft Watershed Plan - Environmental Impact Statement/Report for Lower Silver Creek Watershed in Santa Clara County, California, dated March 1983.

These comments of the San Francisco Regional Office of the Federal Energy Regulatory Commission's Office of Electric Power Regulation are made in accordance with the National Environmental Policy Act of 1969 and the August 1, 1973, Guidelines of the Council on Environmental Quality. Our principal concern with proposals affecting land and water resources involve the Commission's responsibilities under the Federal Power Act and the National Gas Act. These responsibilities relate to the possible effect of such proposals on bulk electric power facilities, including potential hydroelectric development, and on natural gas pipeline facilities.

The selected plan described in your report, which consists of 0.87 miles of excavated earth channel and 3.77 miles of reinforced concrete lined channel along Silver Creek and the floodproofing of two buildings, does not appear to have any effect on matters of concern to the Federal Energy Regulatory Commission.

Sincerely,

W. F. Kopfler, II
Regional Engineer

Resources Building
1416 Ninth Street
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Boating and Waterways
Department of Parks and Recreation
Department of Water Resources

[redacted]
GOVERNOR OF
CALIFORNIA

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Conservation Corps
Colorado River Board
Energy Resources Conservation and Development Commission
Regional Water Quality Control Boards
San Francisco Bay Conservation and Development Commission
Solid Waste Management Board
State Coastal Conservancy
State Lands Commission
State Reclamation Board
State Water Resources Control Board

Mr. Eugene E. Andreuccetti
State Conservationist
Soil Conservation Service
2828 Chiles Road
Davis, CA 95616

April 18, 1983

Dear Mr. Andreuccetti:

The State has reviewed the Draft Watershed Plan and EIS/R, Lower Silver Creek Watershed, Santa Clara County, submitted through the Office of Planning and Research in accordance with OMB Circular A-95 and the National Environmental Polocy Act of 1969.

The review of this document was coordinated with the State Water Resources Control Board and the Departments of Conservation, Fish and Game, Forestry, Parks and Recreation, Water Resources, Health Services, and Transportation.

Although the State has no comments or recommendations to offer on this document, we nevertheless appreciate having been given an opportunity to review it.

Sincerely,

GORDON F. SNOW, Ph.D
Assistant Secretary for Resources

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

(SCH 83031511)

11th Floor, County Government Center, East Wing, 70 West Hedding Street, San Jose, CA 95110 (408) 299-2424

**santa clara county
intergovernmental
council**

April 29, 1983

Mr. Eugene E. Andreuccetti
State Conservationist
Soil Conservation Service
2828 Chiles Road
Davis, CA 95616

Dear Mr. Andreuccetti,

This is to confirm our conversation with Mr. David Betullio, April 29, 1983, regarding the recreation potential in the Interagency Review Plan - Envronmental Impact Statement/Report from your office for Lower Silver Creek Watershed in Santa Clara County.

Mr. Felice Enrico, Park Planner for Santa Clara County Parks and Recreation Department, has stated our county's concern with the compliance of the Trails and Pathways planned for Silver Creek, adopted in the General Plan. We understand that these plans have been taken into consideration for the final E.I.S. and that it will be possible to use these right-of-way and maintenance roads or levees for recreation in the future - when desired.

This seems a very good solution to us and we appreciate your cooperation in this matter.

Sincerely,

Barbara F. Winckler

Barbara F. Winckler
Trails and Pathways Committee

Campbell
Cupertino
Gilroy
Los Altos
Los Altos Hills
Los Gatos
Milpitas
Monte Sereno
Morgan Hill
Mountain View
Palo Alto
San Jose
Santa Clara
Saratoga
Sunnyvale
County of Santa Clara
Santa Clara Valley Water District
Santa Clara County Special Districts
Santa Clara County School Districts

United States
Department of
Agriculture

Office of
the Secretary

Office of
Minority Affairs

Washington, D.C.
20250

IN REPLY
REFER TO: 8140 Supplement 8

SUBJECT: Watershed Plan - Environmental Impact Statement/Report for Lower Silver Creek Watershed in Santa Clara County, California

TO: Eugene E. Andreuccetti
State Conservationist

THRU: Peter Myers, Chief PCM
Soil Conservation Service

The draft Watershed Plan - Environmental Impact Statement/Report for Lower Silver Creek Watershed was reviewed by this office to assess the civil rights impact for the socio-economic effects the proposed plan will have on minorities, women, the aged and handicapped persons residing in or near the project area.

It appears that you have adequately taken into consideration all issues having civil rights impacts and that both minority and nonminority watershed residents and farm operators will have equal opportunity to the benefits generated by the installation of the project.

F. Cleo Spartin

F. CLEO SPARTIN
Acting Director

IN REPLY REFER TO

Natural Resource

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
Sacramento Area Office
2800 Cottage Way
Sacramento, California 95825

MAR 18 1983

Soil Conservation Service
United States Department
of Agriculture
2828 Chiles Road
Davis, California 95616

Dear Sir:

As requested, we have reviewed the draft Watershed Plan-Environment Impact Statement/Report for Lower Silver Creek Watershed in Santa Clara County, California and found no Indian lands under the jurisdiction of this office are involved.

Sincerely,

Eddie V. Edwards
Assistant Area Director-Resources

CITY OF SAN JOSE, CALIFORNIA

151 W. MISSION STREET
SAN JOSE, CALIFORNIA 95110
(408) 277-4661

PARKS & RECREATION
DEPARTMENT

May 26, 1983

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, Ca. 95118

Attention: Mr. Randy Talley

Dear Mr. Talley:

This letter is in response to your inquiry regarding the impact of proposed improvements to the Silver Creek channel upon Mayfair Park.

Mayfair Park is a City of San Jose park which was acquired and developed with federal funding assistance through Land and Water Conservation Fund grants #06-00139 and #06-00140. Grant conditions require that no property acquired or developed with assistance through this federal program be converted to other than public outdoor recreation uses.

A passive, open space portion of Mayfair Park abuts the stream channel which is proposed for improvement by the Santa Clara Valley Water District. Our understanding is that the proposed project will enlarge the channel through Mayfair Park by an average of approximately 20 feet, will leave that stream as an earthen channel, will not affect any park hardware, and will provide mitigation through the planting of trees and shrubs. As such, it is our feeling that the proposed project will not cause a conversion to other than public outdoor recreation uses and therefore does not violate the conditions of the Land and Water Conservation Fund grants.

Very truly yours,

LOUIS M. HERNANDEZ, Director
Parks and Recreation

LMH:SJM:bb

cc: Mr. David Kelts,
Calif. Department of Parks and Recreation

Mr. Dave DeTullio, ✓
U.S. Department of Agriculture

STATE OF CALIFORNIA—THE RESOURCES AGENCY GEORGE DEUKMEJIAN, *Governor*

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 2390
SACRAMENTO 95811
[illegible] 445-2358

JUN 23 1983

Mr. John D. Cherry
Associate Regional Director
Resource Management and Planning
Western Region
National Park Service
450 Golden Gate Avenue
San Francisco, CA 94102

Dear Mr. Cherry:

Mayfair Community Park
LWCF Nos. 06-00139, 06-00140

Attached are copies of letters from the U.S. Department of Interior, Office of the Secretary (dated April 26, 1983) and from the San Jose Park and Recreation Department (dated May 26, 1983). We will not repeat or paraphrase the contents of these letters.

Also attached is a map of the area involved which has been marked to indicate the effected portion of Mayfair Park. The existing right-of-way is denoted by a long blue line interrupted by a double dash and the proposed right-of-way is denoted by a solid red line. The increased area of right-of-way for stream improvement within the park amounts to 0.26 acres. The work to be done will be debris removal and reshaping the stream bank to taper from the proposed right-of-way line to the bottom of the stream bed. The reshaped area will be at least as useful for recreation purposes and probably more safely so.

Mr. Hernandez states his position that the channel improvements will not constitute a conversion within Section 6(f)(3) of the LWCF Act.

Since there appears to be a net recreational benefit from the stream improvement plus the mitigation at Mayfair Park it is also our position that the improvements on the Silver Creek channel will not constitute a 6(f)(3) conversion.

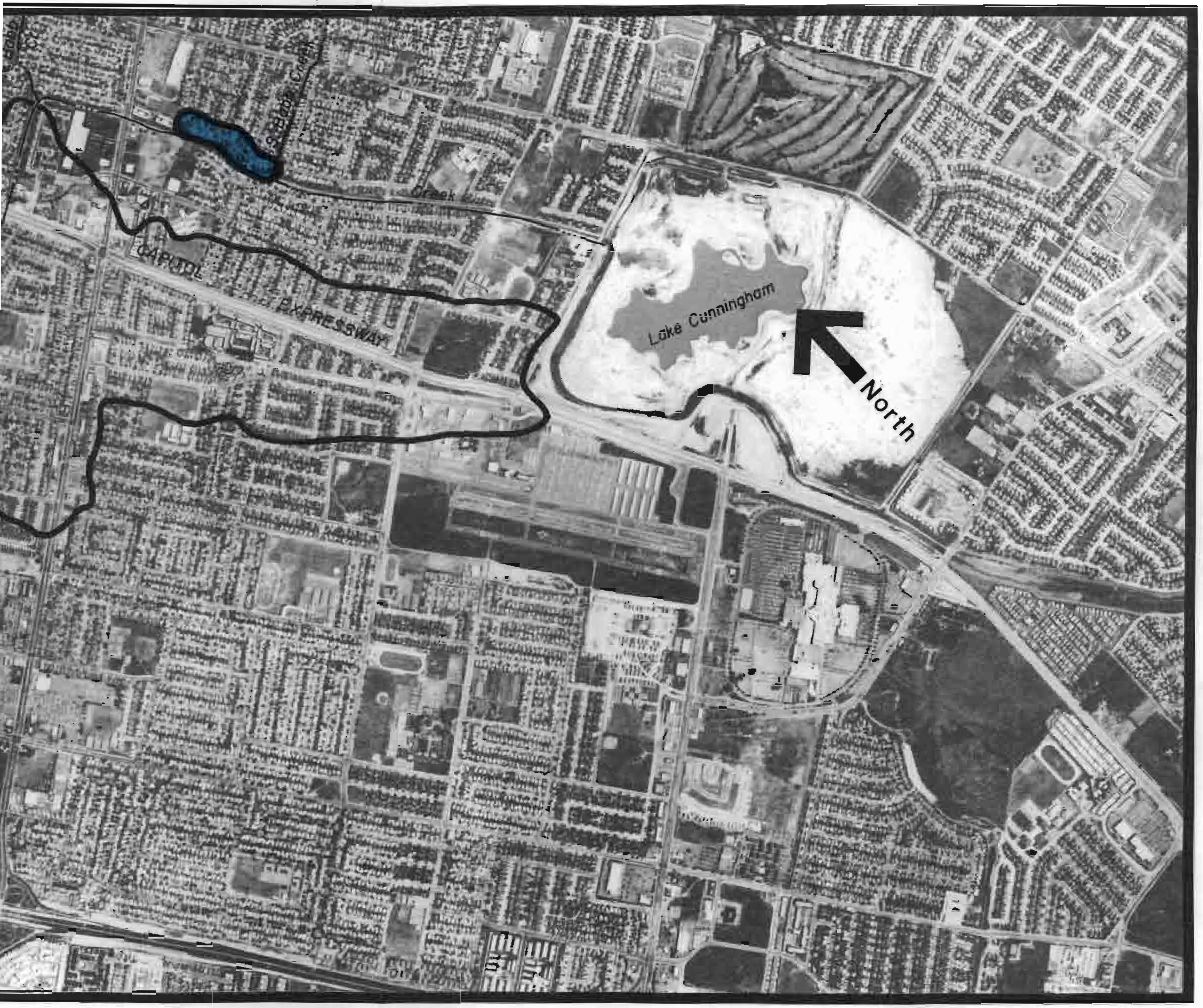
Sincerely,

Original Signed by
J. Warren Gardner
Carol Hallett
Director

Attachments

cc: Jim Murphy, City of San Jose
Eugene E. Andreuccetti, U.S. Department of Agriculture
Dave DeTullio, U.S. Department of Agriculture
[illegible] Talley, Santa Clara Valley Water District

APPENDIX B
FLOODPLAIN MAP, 100-YEAR WITH AND WITHOUT PROJECT
FLOODPLAIN MAP, 500-YEAR WITH AND WITHOUT PROJECT



Legend

- ◯ 100–Year Flood Plain Without Project
- ● 100–Year Flood Plain With Project Installed

Lower Silver Creek Watershed Project

100–Year Flood Plain

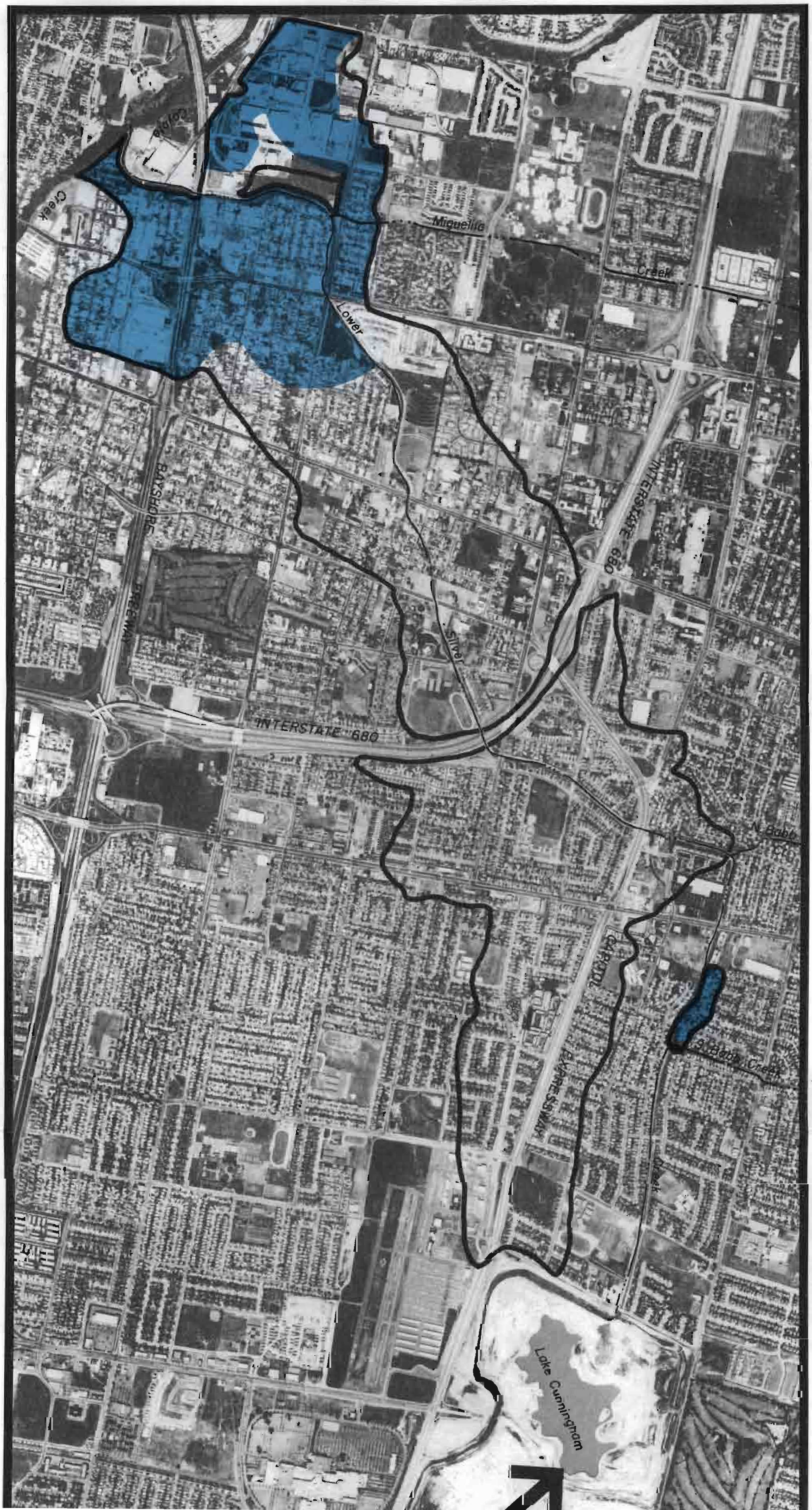
Santa Clara County, California

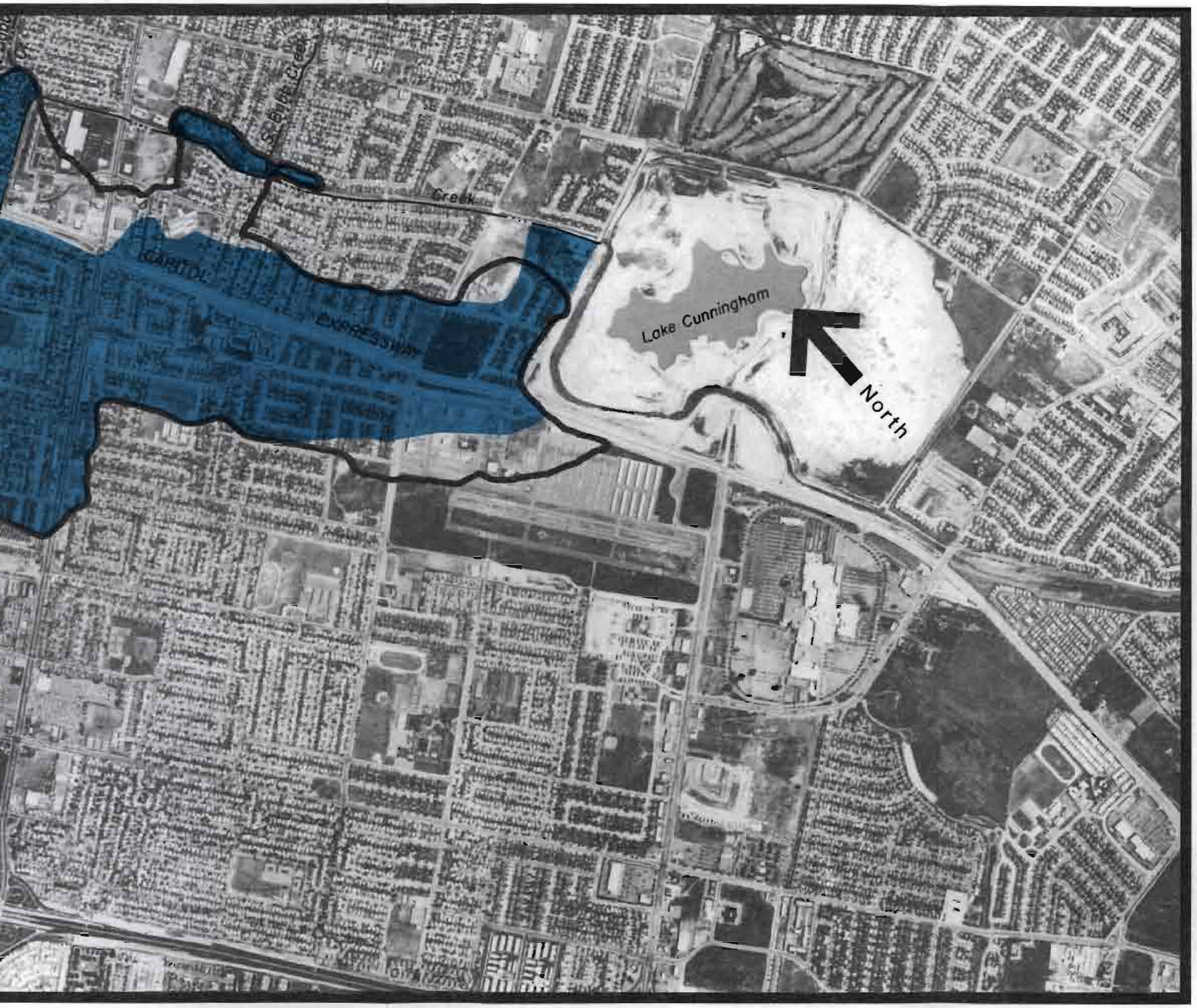
November 1982

1″= 1500′

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Figure B–1


Coyote
Creek
Miguelito
Creek
Lower
Silver
Creek
BAYSHORE
FREEWAY
INTERSTATE 680
INTERSTATE 680
N. Babb
Cr.
CAPITOL
EXPRESSWAY
S. Babb Creek
Lake Cunningham



Legend

500-Year Flood Plain Without Project

500-Year Flood Plain With Project Installed

Lower Silver Creek Watershed Project

500-Year Flood Plain

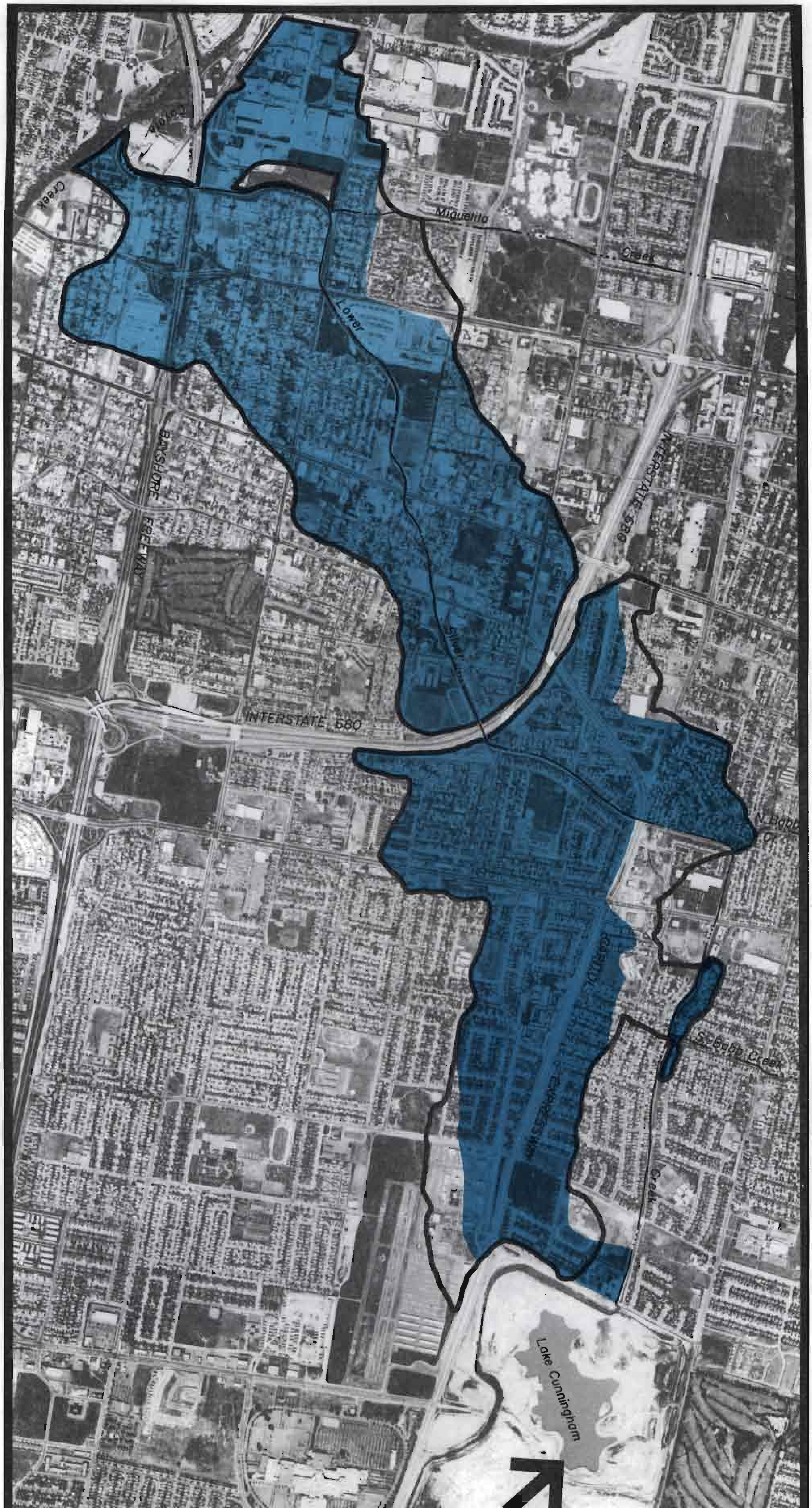
Santa Clara County, California

November 1982

1″=1500′

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Figure B-2


Coyote
Creek
Miguelita
Creek
Lower
Silver
BAYSHORE FREEWAY
INTERSTATE 680
INTERSTATE 680
N. Babb Cr.
S. Babb Creek
Capitol
Expressway
Creek
Lake Cunningham

APPENDIX C
DISPLAY OF PRINCIPLES AND STANDARDS ACCOUNTS FOR RECOMMENDED PLAN

NO PAGE
C-2

RECOMMENDED ALTERNATIVE
NATIONAL ECONOMIC DEVELOPMENT ACCOUNT
Lower Silver Creek Watershed, California

Components	Measures of Effects (Average Annual)[1]	Components	Measures of Effects (Average Annual)[1]
Beneficial Effects:		Adverse Effects:	
The value to users of increased outputs of goods and services:		The value of resources required for a plan:	
1. Flood Prevention	$1,587,300	1. Project Installation Costs	
2. Savings in FEMA Costs	29,000	a. Channel Work	$1,004,500
		b. Floodproofing	800
		2. Project OM&R	65,100
		3. Project Administration	94,100
TOTAL BENEFICIAL EFFECTS:	$1,616,300	4. Interest During Construction	98,100
		TOTAL ADVERSE EFFECTS:	$1,353,700

NET BENEFICIAL EFFECTS: $360,200

November 1982

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[1] Price Base 1982, discounted and annualized at $7^7/_8$ percent interest rate for 100 years.

RECOMMENDED ALTERNATIVE
REGIONAL ECONOMIC DEVELOPMENT ACCOUNT
Lower Silver Creek Watershed, California

Components	Measure of Effects (Average Annual)[1]	
	State of California	Rest of Nation
Beneficial Effects:		
The value of reduced damages and increased output of goods and services to users residing in the region.		
1. Flood Prevention	$1,587,300	0
2. Savings in FEMA Costs	0	$29,000
TOTAL BENEFICIAL EFFECTS:	$1,587,300	$29,000

Components	Measure of Effects (Average Annual)[1]	
	State of California	Rest of Nation
Adverse Effects:		
The value of resources contributed within the region to achieve the objectives of the plan.		
1. Project Installation		
a. Channel Work	$136,300	$ 868,200
b. Floodproofing	200	600
2. Project OM&R	65,100	0
3. Project Administration	0	94,100
4. Interest During Construction	$ 18,800	$ 79,300
TOTAL ADVERSE EFFECTS:	$220,400	$1,042,200

November 1982

---

[1] Price Base 1982, discounted and annualized at $7^7/_8$ percent interest rate for 100 years.

RECOMMENDED ALTERNATIVE
SOCIAL WELL-BEING ACCOUNT
Lower Silver Creek Watershed, California

	MEASURES OF EFFECTS	
COMPONENTS	Beneficial Effects	Adverse Effects
A. Real Income Distribution	Eliminates the financial hardships of repairing property damages and replacing personal belongings. Create temporary jobs for area residents during project installation.	None
B. Life, Health, and Safety	Life threatening risk from a 100-year flood eliminated to residents of 608 homes, 1 apartment complex, and students of 1 school. Eliminate interior flooding from a 100-year flood to 1,194 residences, 61 commercial establishments, 12 industrial buildings, 1 church, and 4 school buildings. Road closures and associated traffic disruptions to emergency services (fire, police, medical) alleviated. Reduce the hazards to health and safety that are present during periods of flooding.	Temporary increase in air pollution and noise levels during construction. Some disruptions of normal life patterns during channel work construction. Some disruptions to normal travel patterns during construction.

RECOMMENDED ALTERNATIVE
ENVIRONMENTAL QUALITY ACCOUNT
Lower Silver Creek Watershed, California

COMPONENTS	MEASURES OF EFFECTS
Adverse Effects:	
A. Aesthetics	Trees and shrubs between Wooster Avenue and Coyote Creek that serve as a visual screen and noise buffer will be lost temporarily until the biological mitigation plantings become established. Much of the existing earthen channel will be converted to concrete increasing the channel's visibility in some areas.
B. Ecological	There will be a permanent loss of wildlife habitat in some of the concrete sections of channel. Other areas will have a temporary loss of habitat values until the mitigation plantings become established.
C. Cultural	None identified.
Beneficial Effects:	
A. Aesthetics	The aesthetics of the earthen channel sections will be enhanced by the biological mitigation plantings and the erosion control plantings. The widened earthen channel sections will support larger, visually pleasing wetlands. The aesthetics of some of the concrete sections will be improved by the 0.5 acres of landscape mitigation plantings along King Road and between Interstate 680 and Jackson Avenue and also by architecturally treating the concrete section between Mayfair Park and San Antonio Street.
B. Ecological Attributes	The 6.6 acres of biological and landscape mitigation plantings will provide long-term benefits to wildlife. The present vegetation is removed every few years during maintenance but the mitigation plantings will be maintained for the life of the project. Landscape planting will incorporate species beneficial to wildlife.
C. Cultural Attributes	None identified.

SUMMARY AND COMPARISON BETWEEN RECOMMENDED PLAN AND ALTERNATIVES
Lower Silver Creek Watershed, California

EFFECTS	ALTERNATIVE 1 NO PROJECT	ALTERNATIVE 2 NONSTRUCTURAL	ALTERNATIVE 3, CHANNEL WORK AND FLOODPROOFING (Recommended Plan)
Measures	--	Perimeter walls around 5 commercial and industrial properties; protective walls around 157 properties; elevate 35 residences; relocate 10 residences	4.64 miles of channel modification; 2 buildings floodproofed
Project Investment ($)	0	3,010,000	13,954,000
National Economic Development Account			
Beneficial Effects (Average Annual) ($)	--	635,900	1,616,300
Adverse Effects (Average Annual) ($)	--	328,800	1,262,600
Net Beneficial Effects	--	307,100	353,700
Regional Economic Development Account			
Beneficial Effects (Average Annual) ($)			
Region	--	634,800	1,593,800
Rest of Nation	--	1,000	29,000
Adverse Effects			
Region	--		220,400
Rest of Nation	--		1,042,200
Social Well-Being Account			
Reduction of average annual flood damages (%)	0	36	89
Properties protected by project (#)	0	207	1,272
Residences relocated (#)	0	10	0
Major roadways flooded at 100-year event (#)	9	9	2
Environmental Quality Account			
Beneficial Effects	--	--	Establish 6.6 acres of trees and shrubs beneficial to wildlife; visual quality to parts of channel improved.
Adverse Effects	Periodic removal of vegetation by maintenance activities.	Periodic removal of vegetation by maintenance activities.	Permanent loss of wildlife habitat in concrete sections of channel.

November 1982

APPENDIX D
GLOSSARY

NO PAGE

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GLOSSARY

acre-feet (ac. ft.)--Unit of volume measurement equal to one acre (43,560 sq. ft.) by one foot depth.

alluvial--Of, pertaining to, or composed of alluvium.

alluvium--Sediment deposited by flowing waters.

alternatives--Possible designs chosen to fulfill the objectives of a project; one of which will be chosen based upon multidisciplinary criteria.

amortization--The process of liquidating a debt by installment payments or payment into a sinking fund; to prorate over a defined period, at a specified interest rate.

benefits, average annual--The long-termed average of the annual benefits expected to occur each year.

benefits, net--The difference between the average annual benefits and the average annual costs; expressed as a negative value when costs exceed benefits.

benefit-cost (B:C) ratio--Average annual benefits divided by the average annual costs; value must exceed 1.0 for the project to be considered for authorization by Congress.

California Environmental Quality Act (CEQA)--Instituted in 1970, this state law recognizes environmental interrelationships and regulates impacts by requiring an Environmental Impact Report or Negative Declaration for almost all developments or projects.

capacity--The maximum volume that a water conveyance system is capable of transporting, or that a reservoir can hold.

channelization--The process of altering any water carrying system (stream, river, channel, ditch, etc.) to change its capacity; syn. -- channel enlargement, channel modification.

chaparral--A broad-leaved vegetative community of the coast ranges and western slope of the Sierra Nevada, characterized by buckwheat, sage, buckbrush, manzanita, and chamise.

compensation--The counter balancing of any environmental impact by the equivalent replacement of lost values (wildlife habitat, esthetic, social, economic, etc.); see also mitigation.

costs, average annual--The average cost incurred each year to pay for a project; usually involves the amortized construction cost plus the annual cost of operation, maintenance, and replacement.

costs, landrights--The cost of securing easements, right-of-way, and real property; for PL-566 purposes, also includes construction costs of bridges, culverts, and utility modifications.

costs, local--Those expenses borne by the local project sponsors as outlined under PL-566.

cretaceous--A period in geologic time; the third and last period of the Mesozoic Era that occurred about 120 million years ago.

cubic feet per second (cfs)--A hydraulic term denoting flow rate.

discharge (Q)--The flow rate of water through any pipe, ditch, culvert, etc.; usually expressed in cfs.

drop structure--A device built into steep-sloped channels to reduce the speed of water flow below erosive velocities.

easements--A right given or sold to a person or agency to make limited use of another's real property; see also right-of-way and landrights.

Endangered Species Act (1973)--By law, provides protection to all species of plants or animals (including invertebrates) that are currently in danger of extinction ("endangered") and those that may become so in the foreseeable future ("threatened"); allows for the preservation of ecosystems upon which an endangered species is dependent, designated as "critical habitat."

erosion--The detachment, transportation, and deposition of soil.

erosion, rill--The erosional action of water that forms small (less than 1 foot deep), steep-sided channels called rills; left unchecked, rills become gullies.

erosion, sheet--The uniform movement of soil on a slope by sheets of running water, as distinct from streams.

excavation--The act of digging out and removing earth from a given area.

floodplain--An area subject to flooding; includes lands bordering streams, rivers, ponds, lakes, and undrained lowlands.

floodproofing--Protecting an individual structure against flood damage by installing such things as flood walls, waterproof sealant, or ring dikes; also includes elevating the structure above the flood level.

floodshield--A device installed when floodproofing a building that seals an entrance when in place.

floodwall--A concrete wall constructed along the sides of a channel to provide freeboard.

floodwarning system--A system or device, usually electronic, that sounds an audible sound when flooding danger is imminent in a local area; e.g., overtopping of dams.

floodwater retarding structure--A dam or reservoir that impounds floodwaters and releases them over an extended period.

grade stabilization structure--Any of a variety of devices installed in steep-sloped channels to reduce the velocity of the water below that required to erode the channel bottom.

ground water--Water beneath the earth's surface held in saturated soil and rocks; supplies wells and springs.

habitat--The area where an organism or biological population normally lives or occurs; includes the total area where all physical and biological life requirements of a species are found.

habitat units (HU)--A mathematical index of habitat value to wildlife, incorporating both size and suitability; derived by multiplying habitat quantity (in acres) by a habitat quality factor (0.0 to 1.0, where 1.0 is superior).

impacts, environmental--Any change in environmental conditions, positive or negative, that occur as a result, direct or indirect, of installing a project or any other modification.

induced flooding--New flooding, and/or increased depth and duration of flooding, caused by the project.

intermittent stream--A stream or portion of a stream that flows only in direct response to precipitation. It is dry for a large part of the year, usually more than 3 months.

jurassic--A period in geologic time; the second period of the Mesozoic Era that occurred about 155 million years ago.

landrights--The ownership of real property and/or its use, temporary or permanent; see also easements and right-of-way.

land treatment--Soil and water conservation practices on rural lands that preserve and perpetuate the soil resource base.

land use--The service or activity to which a parcel of land is employed; e.g., urban residential, commercial, industrial, green belt, recreation, etc.

levee--An embankment raised to prevent a river or stream from overflowing.

levee, setback--Refers to the placement of levees at a distance from the watercourse; useful to maintain the natural features of the floodplain, while still containing flood waters.

mitigation--The process of incorporating project design features that reduce project impacts on fish, wildlife, aesthetics, and other environmental elements; see also compensation.

n-value--A coefficient of channel roughness used in hydraulic computations; determined by such factors as bed material, bank material, surface irregularity, vegetation, uniformity of cross section, obstructions, and meandering.

National Economic Development Plan (NED)--A plan, or element of a plan, that produces the highest level of net national economic development benefits.

National Environmental Policy Act (NEPA)--A 1970 law that requires each federal agency to prepare an Environmental Impact Statement to assess and avoid environmental impacts in advance of each major action, recommendation, or project, that would significantly affect the quality of the human environment.

nonstructural measures--Water and sediment management practices that avoid structural modifications and construction; includes flood proofing, flood warning systems, relocation, flood insurance, land use regulation, etc. These measures reduce flooding without significantly changing flow patterns; see also structural measures.

OBERS projections--A major series of documents publishing projections of socio-economic parameters formulated for water resource studies; joint effort of the Office of Business Economics (OBE) and the Economic Research Service (ERS).

off-site storage--A reservoir, built along side of a channel, to which flood water is temporarily diverted; syn. -- off-channel storage.

operation and maintenance (O&M)--The general use and repairs of channels, reservoirs, structures, and their related rights-of-way; often used in reference to costs.

overdraft--The consumptive use of water beyond the amount naturally supplied each year resulting in declining storage reserves; often said of ground water basins.

perimeter wall--A wall constructed around the edge of a property for floodproofing.

plant communities--An association of plants and animals that commonly occur together; usually named for the dominant vegetation in the area.

protective wall--An impermeable wall placed around and adjacent to a building for floodproofing.

Public Law 83-566 (PL-566)--See Watershed Protection and Flood Prevention Act.

prime agricultural land--Prime farmland that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, or other land, but not urban built-up land or water). It has the soil quality, growing season, and irrigation supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods.

reach--A segment of the project area associated with a stream or channel; boundaries are arbitrarily defined and are generally established early in the study.

recharge--The process of restoring storage reserves where water input exceeds withdrawals (draft) during the wet part of the year; often said of ground water basins or aquifers; see also overdraft.

recurrence interval--The time period (in years) between storms of a specified intensity; inverse of percent event (e.g., 1 percent event = 100-year storm).

residual flooding--All surface water flooding recognized to remain in the floodplain after project measures have been implemented.

Resource Conservation District--A local unit of state government that is responsible for soil and water conservation within its boundaries.

right-of-way--The right to pass over property owned by another party; see also easements and landrights.

riparian--The zone along banks and adjacent areas of water bodies, water courses, seeps, and springs whose water provide soil moisture in excess of that otherwise available locally; supports hydrophytic vegetation that otherwise would not thrive due to lack of soil moisture.

scoping--The process of determining the significant issues to be addressed in the development of a project.

sediment--Solid material, both mineral and organic, that is suspended in moving water or has been deposited.

sedimentation--The act or process of eroding, transporting, and depositing sediment.

sediment yield--The amount of soil removed from a drainage basin; only represents a fraction of the total erosion as some material remains in the watershed.

setback levees--See levees, setback.

sewer valve, one-way--A device that insures the unidirectional flow of sewage from a home, business, or other building.

soil--The layer of the earth's surface composed of both organic and mineral elements and capable of supporting plant life.

soil association--A group of defined and named taxonomic soil units occurring together in an individual and characteristic pattern over a geographic region.

species--A fundamental catagory of classifying living things, ranking after genus, and consisting of organisms capable of interbreeding.

species, endangered--See Endangered Species Act.

species, threatened--See Endangered Species Act.

structural measures--Water and sediment management practices that involve the construction of channels, reservoirs, sewers, and other devices. These measures usually change flow patterns by making physical changes in one or more of the factors that affect flooding; see also nonstructural measures.

tertiary--A period in geologic time; the first period of the Cenozoic Era that occurred about 30,000,000 years ago.

value, aesthetics--The intangible worth derived from the perceptive enjoyment of a vista, forest sounds, trickling water, etc.

value, content--The cash worth of personal property contained within a building subject to flood damage.

value, structural--The cash equivalent of a building, or some other structure, subject to flood damage.

watershed--The topographic area drained by a single river or creek system.

Watershed Protection and Flood Prevention Act (PL 83-566)--Administered by the Soil Conservation Service, this law provides technical assistance and cost sharing to local sponsors for developing and implementing plans in watersheds no larger than 250,000 acres; may be multipurpose.

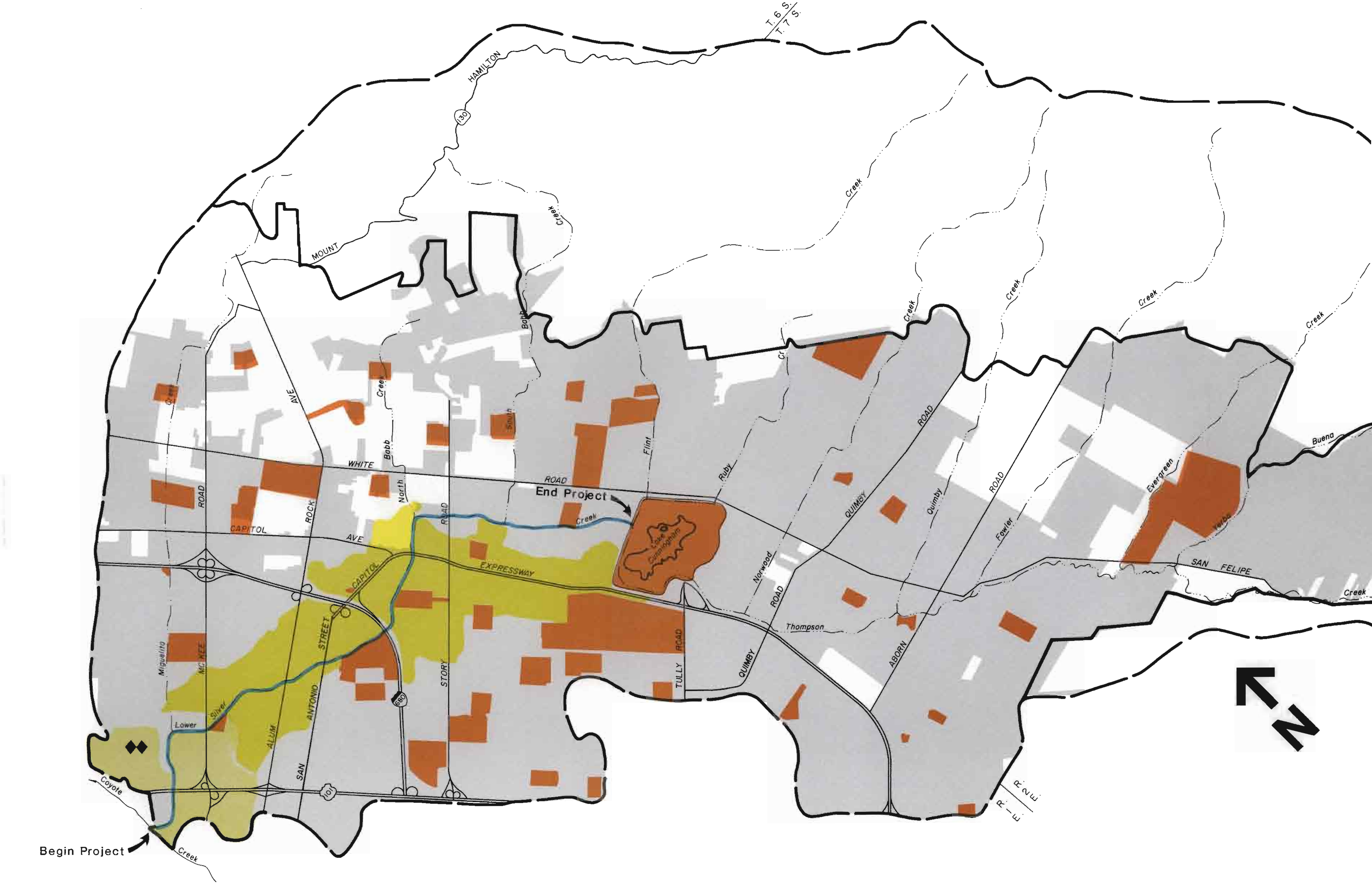
weep hole--An opening in the side of a concrete channel lining to reduce hydrostatic pressure on the outside of the lining.

wetland--Lowlands covered with shallow and sometimes temporary or intermittent waters; includes marshes, bogs, wet meadows, potholes, sloughs, riparian systems, vernal pools, and vegetated shallow margins of lakes, ponds, and reservoirs; a broad category of wildlife habitat.

> Type 3--Inland shallow fresh marshes. The soil is usually waterlogged during the growing season; often it is covered with as much as 6 inches of water.
>
> Type 5--Inland open fresh water. Shallow ponds and reservoirs are included in this type. Water is usually less than 10 feet deep and is fringed by a border of emergent vegetation.

wildlife enhancement--The process of improving the habitat value of an area to wildlife.

APPENDIX E
PROJECT MAP


Begin Project
End Project
Coyote Creek
Lower Silver Creek
Miguelito Creek
Babb Creek
North Babb
South Babb
Flint
Ruby Cr
Norwood
Thompson
Quimby
Fowler
Evergreen
Yerba
Buena
Creek
MC KEE ROAD
ALUM ROCK AVE
SAN ANTONIO STREET
CAPITOL AVE
CAPITOL EXPRESSWAY
WHITE ROAD
STORY ROAD
TULLY ROAD
QUIMBY ROAD
ABORN ROAD
SAN FELIPE
MOUNT HAMILTON
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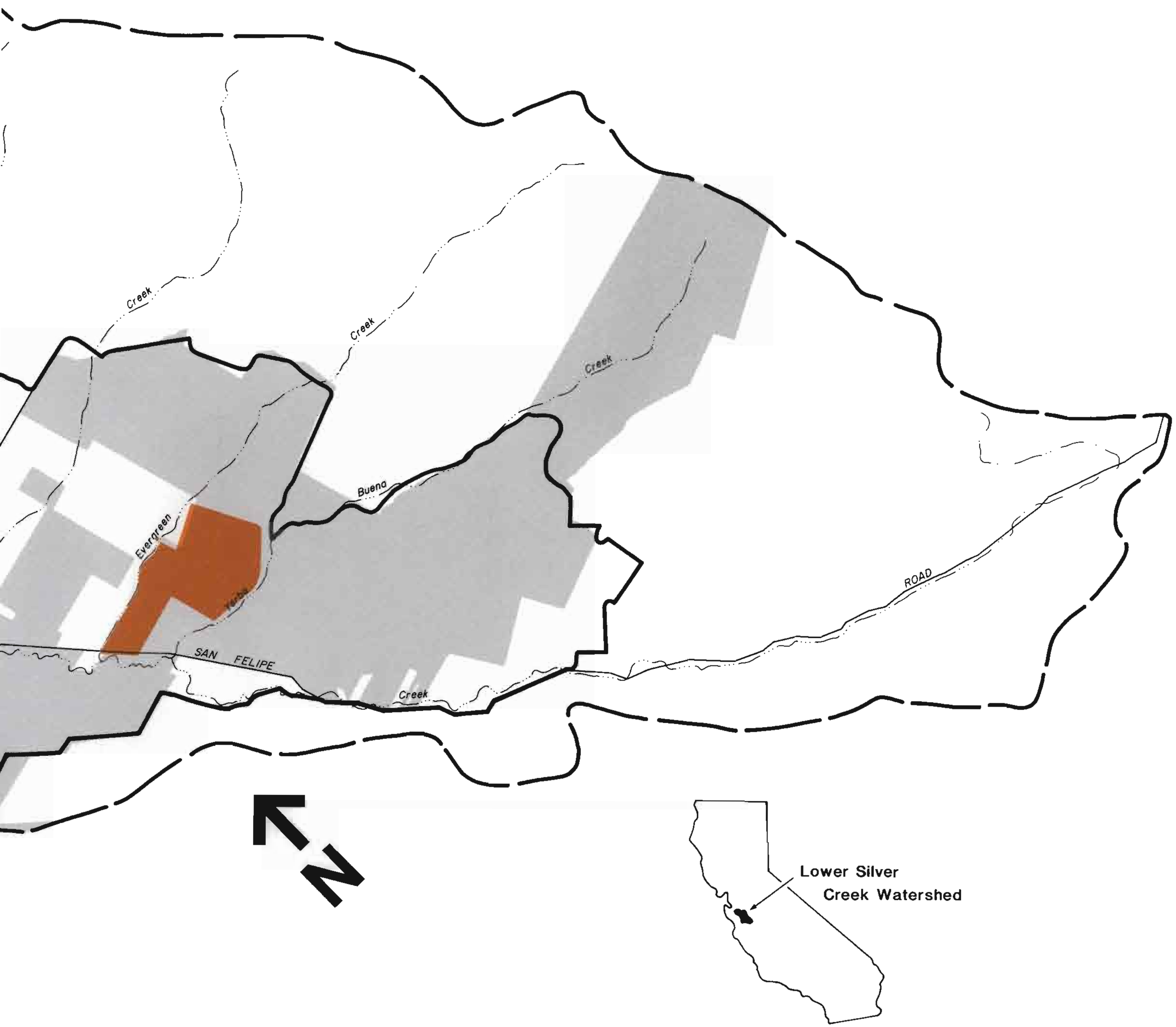
680
130
Lake Cunningham
T. 6 S.
T. 7 S.
R. 1 E.
R. 2 E.
N



Legend

— — —	WATERSHED BOUNDARY
———	URBAN AREA BOUNDARY
～～～	CHANNEL WORK
▬	BENEFITED AREA
▬	COMMON FLOOD PLAIN BENEFITED
▬	PUBLIC LANDS
▬	CITY OF SAN JOSE
◆	FLOOD PROOFED BUILDINGS

PROJECT MAP

LOWER SILVER CREEK WATERSHED PROJECT

SANTA CLARA COUNTY, CALIFORNIA

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE